

### **Department of Energy**



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ROCKY FLATS FIELD OFFICE P O BOX 928 GOLDEN COLORADO 80402-0928

NOV 0 8 1996

96-DOE-03061

Mr Tim Rehder U S Environmental Protection Agency 999 18th Street, Suite 500 Denver, Colorado 80202-2466

Dear Mr Rehder

The Department of Energy/Rocky Flats Environmental Technology Site (Site) requests approval of the Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation/Remedial Investigation (RFI/RI) Report for the Woman Creek Priority Drainage Operable Unit Number 5 (OU 5) including the enclosed addendum for the OU 5 RFI/RI Report. The RFI/RI addendum was drafted at the request of the U S Environmental Protection Agency (EPA) and the Colorado Department of Public Health and Environment (CDPHE) to clarify specific points that are outlined in the addendum. The Site also requests that the CDPHE be consulted and concur with the approval of the complete RFI/RI Report as stated in Section 9, subpart B, paragraph 112 in the Rocky Flats Cleanup Agreement (RFCA)

The Site has addressed in the addendum all the previous comments surrounding the RFI/RI Report. We ask that you respond within 14 days of the signature of this letter to support the acceleration of the Proposed Plan and Corrective Action Decision/Record of Decision (CAD/ROD) for OU 5

Please contact Pat Newberry at 966-2351 with any questions or comments

Sincerely,

Gail Hill, Acting Group Lead Regulatory Liaison Group

Sfarl S, Hell

Enclosure
OU 5 RFI/RI Addendum



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#### Addendum - Phase I RFI/RI Report, Operable Unit 5

#### 12.0 Addendum

The purpose of this addendum is to clarify and incorporate information into the Resource Conservation and Recovery Act (RCRA) Facility Investigation/Remedial Investigation (RFI/RI) Report that was requested by both the United States Environmental Protection Agency (EPA) and the Colorado Department of Public Health and Environment (CDPHE) The requested information was compiled from further investigations pertaining to the following topics

- Ingestion risk values using Gastrointestinal Matrix Effect (GIME) Coefficient of 1 0
- Seeps management under the Final Groundwater Conceptual Plan
- Ecological Risk Assessment (ERA) using new radionuclide benchmarks
- Agency for Toxic Substances and Disease Registry (ATSDR) investigation into health risks to off-site receptors, and
- Other previously unincorporated comments

#### 12 1 Ingestion Risks using a GI Matrix Effect Coefficient of 1.0.

In the Human Health Risk Assessment (HHRA), the GI Matrix Effect coefficient (GIME) used for most chemicals of concern (COCs) was 10 However, for five of the COCs examined, a GIME of 05 was used due to the existence of substantial supporting evidence for the validity of lower GIMEs (Table 6-31 in the RFI/RI report) CDPHE prefers the HHRA to use the more conservative value of 10 The risk factors for all examined scenarios were revisited with these GIMEs adjusted to reflect the requested value of 10 The five COCs which were re-evaluated are Antimony, Aroclor-1254, Beryllium, Fluoranthene, and Pyrene All other risk values remain as they are presented in Chapter 6 of the Final RFI/RI report

The resulting changes affected the following tables in the RFI/RI Report Tables 6-89 through 6-142. The adjusted tables have been supplied in this addendum as Attachment 12.1A, Adjusted GIME Results. The attached tables were numbered to directly correspond to the original tables in the body of the RFI/RI Report. The increase of the GIME did not affect any of the resulting decisions in the RFI/RI report based on the HHRA. However, the risks were slightly increased in select cases. These cases have been listed in Table 12-1. All the cumulative hazard indices (HIs) for all areas of concern (AOCs) remained below the No Further Remedial Action limit of 1. For AOC 1, the reasonable maximum exposure (RME) cancer risk for the future office worker remained the highest at 3E-05. For AOC 2, the maximum cancer risk is based on the future office worker at 4E-06, which also did not change. Therefore, all the risk related conclusions that were drawn from the original calculations are still justified, and no change needs to be made due to the increase in the selected GIME.

The Rocky Flats Field Office (RFFO) does not agree with the use of the more conservative value for the GI Matrix Effect for the above mentioned COCs EPA approved toxicity criteria are derived from studies in which the compound is administered in a readily absorbed form. For virtually all compounds considered in the Rocky Flats Environmental Technology Site (RFETS) risk assessments, absorption of these compounds when ingested in a soil matrix would be much less than if ingested with a food item. RFETS defaults to 10 when information is insufficient to support a lower absorption assumption. If cited in published literature with a decreased absorption, a conservative assumption of 0.5 is used even if the cited values are much less. In the case of Aroclor-1254, there is substantial precedence to use the 0.5 ME, referencing the EPA's polychlorinated biphenyl (PCB) spill policy which uses 0.3 for its "ingestion absorption fraction"



#### 12 2 Seeps Management under the Final Groundwater Conceptual Plan

The trace amounts of organic compounds detected in the seep water were found in a groundwater sample (#62893) which was being used to help characterize the seep water. This sample was from within the Individual Hazardous Substance Sites (IHSSs) 115 and 196. The organic compounds have been attributed to the leading edge of a VOC plume located within the Industrial Area as shown in Figure 3-1 of the Final Groundwater Conceptual Plan. RFETS plans on managing all seeps within the geographical boundaries of OU 5 through the Final Groundwater Conceptual Plan with the goals of protecting surface waters and limiting contaminant migration. The seeps do not play a part in the Corrective Action Decision/Record of Decision (CAD/ROD) for OU 5 based on their contaminant levels and on the consolidation of IHSS 115 and 196 within the Industrial Area OU in accordance with the Rocky Flats Clean-up Agreement (RFCA). However, RFFO understands that the management of seeps does play a vital role in the long-term water quality of the ponds within OU 5, and remedial actions will be planned and implemented accordingly. Such actions may include source removal and/or seep capture and treatment. These actions will be undertaken consistent with the RFCA and statutory requirements for regulatory review and public comment.

#### 12 3 Ecological Risk Assessment (ERA) with New Radionuclide Benchmarks

A complete description of the development process for the benchmark values of radionuclides in the ERA is reported in Appendix C, Ecotoxicological Benchmarks for Radionuclide Contaminants at RFETS, of the Ecological Risk Assessment for Woman Creek and Walnut Creek Watersheds at the Rocky Flats Technology Site which is Appendix N of the OU 5 RFI/RI Report. The development of the benchmarks was conducted by Dr Kathryn Higley, Oregon State University, and Roman Kuperman, Argonne National Laboratory, in 1996 Their results are similar to the benchmark values used in the sitewide ERA presented in the RFI/RI Appendix N, Attachment 2, Table 14 The small variations between the benchmark values and those used in the ERA did not affect the conclusions made for the Woman Creek Drainage

## 12 4 Agency for Toxic Substance and Disease Registry (ATSDR) Investigation into Health Risks to Off-site Receptors

ATSDR is required under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to complete a health assessment of effects caused by the activities at RFETS. The ATSDR health assessment is a sitewide initiative and will include the possibility of off-site receptors affected by dry airborne pond sediment. At present, RFETS is managing the C-1 and C-2 ponds under the Pond Operations Plan which addresses the present and future uses of the ponds. The ponds are to be maintained at a high water level for a number of years, thus limiting the amount of airborne sediments. Therefore, the possibility of an off-site receptor of dried pond sediment was not examined in the RFI/RI.

Any changes in the assumptions made in the evaluation of the health effects from OU 5 will result in the final CAD/ROD being revisited to determine the impacts of those changes. This is in addition to the final CAD/ROD being evaluated every five years as required by law. During the five year review of the final CAD/ROD, the pond operations at that time will be examined for discrepancies which may invalidate the assumptions leading to the CAD/ROD.

#### 12 5 Other Previously Unincorporated Comments

The following statements are short clarifications to the RFI/RI Report to assist in clarifying minor points as requested by the EPA and CDPHE

- As of July 19, 1996, the Rocky Flats Cleanup Agreement (RFCA) was signed between the Department of Energy (DOE)/RFFO, EPA, and CDPHE In RFCA, RFETS was divided into two OUs the Industrial Area and the Buffer Zone In conjunction, selected OUs that were described in the Interagency Agreement (IAG) remained separate due to their position in the CERCLA/RCRA close out process and the amount of study that had already taken place OU 5 was one of the OUs segregated RFCA removed IHSS 115 and 196 (the Original Landfill) from OU 5 and incorporated them into the Industrial Area OU OU 5 can now be considered a low risk site and a No Further Remedial Action (NFRA) candidate as stated in the RFI/RI Report. RFFO intends to issue a Proposed Plan and seek a CAD/ROD for OU 5 based on the analysis and conclusions in the RFI/RI Report
- (Reference page 1-6, paragraph 3) For clarification, the estimated amount of combustible waste burned in the incinerator totaled 60 kg. Twenty kilograms of the combustible waste ash was disposed of in the original landfill. The remaining ash was disposed of in the ash pits with the possibility of some ash being pushed over onto the Concrete Wash Pad. The estimated amount of uranium placed in the incinerator was 100 grams. The exact fate of the 100 grams of uranium which was placed in the incinerator is not known, but is presumed to be either located in the ash pits or within the Original Landfill.
- Table 4-7 has been incorrectly named and should read Summary of Metal COC's Exceeding Background Mean in Groundwater
- (Reference Figure 6-2, COC Selection Process) In using the Gilbert statistical methodology, an inherent part is the use of professional judgment. It is a statistical comparison step in the flow chart
- (Reference page 5-77, 78, <u>Threshold Wind Speed</u>) It is a concern by the CDPHE that gusts were not adequately examined in the setup and calibration of the air model. In this section, a discussion of average threshold values states that the threshold friction velocity is the minimum velocity which results in any soil movement. Therefore, the general assumption is that any wind, sustained or gust, at a lower wind speed than would exceed the threshold friction velocity would not initiate any particulate suspension. The air model used the threshold velocities for the OU 3 wind-tunnel study which are more conservative than the rapid-assessment field study estimated threshold velocities for OU 5 as explained in the text.

Table 12-1
Results of Alterations to the GI Matrix Effect Coefficients for Select COCs

Scenario and AOC	Initial RMS Risk/HI Value	New RMS Risk/HI Value
Future Open Space User, AOC1	6E-6	7E-6
Future Construction Worker, AOC2	6E-8	8E-8
Current Security Worker, AOC1	0 004	0 005
Future Ecological Researcher, AOC1	0 03	0 04
Future Child Open Space User, AOC1	0 03	0 05
Future Construction Worker, AOC2	0 01	0 02
Future Ecological Researcher, AOC2	0 004	0 006
Future Adult Open Space User, AOC2		0 004
Future Child Open Space User, AOC2	0 02	0 03

Attachment 12 1A - Adjusted Gastrointestinal Matrix Effect Coefficient Results



Table 6-89
Construction Worker RME Carcinogenic Risks for OU 5 AOC 1

Chemicals of Concern	Ingestion of Subsurface Soil	Inhalation of Airborne Particulates	Dermal Absorption of Subsurface Soil	External Radiation Exposure	Total Risk by Chemical
Antimony	NA	NA	NA	NA	NA
Aroclor 1254	1 3E-08	NA	7 7E-09	NA	2 1E-08
Benzo(a)anthracene	6 8E-09	NA	NA	NA	6 8E 09
Banzo(a)pyrene	6 4E-08	NA	NA	NA	6 4E-08
Benzo(a)fluoranthene	7 1E-09	NA	NA	NA	7 1E 09
Beryllium	2 7E-08	2 7E 13	NA	NA NA	2 7E-08
Cadmium	NA	1 5E 13	NA	NA	1 5E 13
Copper	NA	NA	NA	NA	NA
Dibenzo(a b)anthracene	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA NA
Indeno(1 2 3 cd)pyrene	NA	NA	NA	NA	NA NA
Mercury	NA	NA	NA	NA	NA
Molybdenum	NA	NA	NA	NA	NA NA
Nickel	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA
		Nonradiological Risk	by Pathway		
	1 2E-07	4 2E 13	7 7E-09	NA	
Uranium 233/234	11 E-09	3 1E 10	NA NA	61E12	1 4E 09
Uranium 235+D	8 8E 11	6 8E 11	NA	2 2E-08	2 2E-08
Uranium 238+D	1 4E 09	3 7E-09	NA	1 3E 07	1 3E 07
	<u> </u>	Radiological Risks	by Pathway		
	2 5E-09	4 0E-09	NA	1 5E 07	
			Total Nonradiologica		1 3E 07
			Total Radiological Ri	sk	1 6E 07
			Total Risk		3 0E-0 7

NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

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Table 6-90
Current Security Worker RME Carcinogenic Risks for OU 5, AOC1

		Inhalation of	Dermal	External	Total Rusk
	Ingestion of	Aurborne	Absorption of	Radiation	by
Chemicals of Concern	Surface Soil	Particulates	Surface Soil	Exposure	Chemical
Aroclor 1254	5 2E-08	NA	2 1E-07	NA	2 6E-07
Benzo(a)anthracene	8 6E-09	NA	NA	NA	8 6E-09
Benzo(a)pyrene	6 5E-08	NA	NA	NA	6 5E-08
Benzo(b)fluoranthene	8.7E-09	NA	NA	NA	8 7E-09
Copper	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	4 0E-08	NA	NA	NA	4 0E-08
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1 2,3-cd)pyrene	1 1E-08	NA	NA	NA	1 1E-08
Mercury	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA
	1	Nonradiologica	l Risks by Path	way	
	1 8E-07	NA	2 1E-07	NA	
Uranium-233/234	8.3E-09	2.4E-09	NA	5 7E-11	1 1E-08
Uranium-235+D	2 5E-09	5 2E-10	NA	2.0E-07	2.0E-07
Uranıum-238+D	9.9E-08	2.8E-08	NA	1 2E-06	1.3E-06
		Radiological	Risks by Pathwi	y	
	1 1E-07	3 1E-08	NA	1 4E-06	
			Total Nonradio	logical Risk.	4 0E-07
			Total Radiolog	ical Risk.	1 5E-06
	1		Total Risk.		2E-06

<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

Table 6 91 Ecological Worker RME Carcinogenic Risks for OU 5, AOC1

						Dermal			
		Ingestion of		Inhalation of	Dermal	Absorption of	Dermal	External	
	Ingestion of	Seep	Ingestion of	Aurborne	Absorption of	Seep	Absorption of	Radiation	Total Risk
Chemicals of Concern	Surface Soil	Sediments	Seep Water	Particulates	Surface Soil	Sediments	Seep Water	Exposure	by Chemica
Acetone	YZ.	NA	NA	NA	NA	AN	AN	AN	ΑN
Antimony	NA	NA	NA	NA	AN	AN	AN AN	AN	Y Z
Aroclor 1254	4 6E-08	NA	AN	NA	1 2E-07	ΑΝ	A'N	AN	1 75.07
Benzo(a)anthracene	7 6E-09	NA	NA	NA	AN	NA	Ϋ́Z	AN AN	7 65.00
Benzo(a)pyrene	\$ 8E-08	NA	AN	٧X	VZ	NA AN	AN	ΔV	COE 00
Benzo(h)fluoranthene	7 7E-09	NA	Ϋ́ν	NA	AN	NA	Y Z	AN AN	2 25 00
Beryllium	NA	1 3E-08	NA	3 1E 12	NA A	NA NA	AN	AN AN	1 35 00
Copper	NA	NA	×z	AN	Y.	NA NA	ΑN	AN AN	NA
Dibenzo(a,h)anthracene	3 SE-08	NA	NA	NA	NA	NA	AN	AN	2 SE 08
1 Dichloroethene	ΑN	AN	2 0E-09	NA	Ϋ́	AN	6 0E-09	AZ.	8 OF 09
1.2 Dichloroethene	NA	AN	NA	NA	AN	AN	NA A	NA	AN
Fluoranthene	NA	NA	NA	NA	Ϋ́Α	NA	NA	AZ.	₹Z
Indeno(1.2.3-cd)pyrene	9 6E-09	Ϋ́Υ	NA	NA	ΑN	Ϋ́Α	AN	VV.	9 6E-09
Mercury	VV	NA	NA	NA	NA	NA	NA	NA	NA
ryrene	٧×	ΑN	NA	NA	٧×	A'A	AN	AN	A'Z
Silver	VA	AN	NA	NA	NA	NA	NA	NA	VΑ
I etrachioroethene	NA	NA	1 2E-09	NA	NA	¥X	8 4E 08	V V	9 4E 00
Inchloroethene	ΑN	VV	6 SE 11	٧×	NA	NA	2 8E-09	AN	2 85.00
Zinc	NA	NA	NA	NA	NA		NA	NA	NA
				lonradiological	Nonradiological Risks by Pathway	way			
	1 6E-07	1 3E 08	3 3E-09	3 1E-12	1 2E-07	NA	9 1E-08	NA	
Uranium 233/234	7 3E-09	2 0E 10	NA NA	1 75.00	2	1			
Uranium 235+D	2 2E-09	1 6E 11	NA	3.7E-10	C X	412	Y.	11215	9 2E-09
Uranium 238+D	8 7F. 08	2 4F 10	47	200	511	5	AN.	1 1E-07	1 1E-07
		20.72	51	2 UE US	AN.	AN	NA A	6 4E-07	7 SE-07
	00 00			radiological R	radiological risks by Pathway	. 1			
	X 02.08	4 SE 10	NA	2 2E-08	Ϋ́Α	NA	ΑN	7 SE-07	
					-	Total Nonradiological Risk	ogical Risk		3 9E-07
					1	Total Radiological Risk	cal Rısk		8 7E-07
					-1	Total Risk.			1E-06

"NA" = Not a COC for this pathwry or no toxicity factor is available or appropriate for exposure route



Table 6-92
Office Worker RME Carcinogenic Risks for OU 5, AOC1

Chemicals of Concern	Ingestion of Surface Soil	Inhalation of Airborne Particulates	Dermal Absorption of Surface Soil	External Radiation Exposure	Total Risk
Aroclor 1254	8.3E-07	NA	2 1E-06	NA	2 9E-06
Benzo(a)anthracene	1 4E-07	NA	NA	NA	1 4E-07
Benzo(a)pyrene	1 0E-06	NA	NA	NA	1 0E-06
Benzo(b)fluoranthene	1 4E-07	NA	NA	NA	1 4E-07
Copper	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	6 4E-07	NA	NA	NA	6 4E-07
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1 2,3-cd)pyrene	1 7E-07	NA	NA	NA	1 7E-07
Мегсигу	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA
	1	Vonradiological	Risks by Pathw	y	
	3 0E-06	NA	2 1E-06	NA	
Uranium-233/234	1.3E-07	3 8E-08	NA	8 6E-10	1 7E-07
Uranium-235+D	4.0E-08	8.4E-09	NA	3 0E-06	3 1E-06
Uranum-238+D	1 6E-06	4 5E-07	NA	1 8E-05	2 0E-05
		Radiological I	cisks by Pathway		
	1 8E-06	5 0E-07	NA	2 1E-05	
	<del>                                     </del>	· · · · · · · · · · · · · · · · · · ·	Total Nonradio	logical Risk.	5 0E-06
			Total Radiologi		2.3E-05
<del></del>	1		Total Risk.		3E-05

<sup>&</sup>quot;NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

Table 6 93 Open Space User RME Carcinogenic Risks for OU 5, AOC1

		,,						_				_	_	_	_						_	<b></b> ,		_				_		_	
	Total Risk by Chemical	ΑN	ΝA	8 9E-07	4 4E-08	3 3 E-07	4 SE-08	2 4E-07	NA	2 0E-07	1 2E-07	NA	NA	\$ 6E-08	Ϋ́	AN	ΑN	1 3E-06	4 2E-08	ΑX			00 23 6	4 OE-00	4 4E-07	2 9E-06			3 3E-06	3 3E-06	7E-06
External	Radiation Exposure	NA	Ą	AN	AN	NA	NA	NA	NA	AA	٧N	AN	٧N	A'N	Ϋ́	ΥN	ĄN	Ϋ́	Ϋ́	AN		NA	0. 20.	1 45 10	4 3E-07	2 6E-06		3 0E-06	ogicl Risk	d Risk	
Dermal	Absorption of Seep Water	NA	Ϋ́	NA	NA	NA	NA	NA	NA	NA	9 0E-08	NA	NA	ΑN	NA	NA	NA	1 3E-06	4 1E-08	NA		1 4E-06	12.2	V.	NA	NA		NA	Total Nonradiologici Risk	Total Radiologici Risk	Total Risk
	Absorption of Seep Sediments	NA	Ϋ́	ΑN	NA	ΝA	ΑN	ΑN	NA	NA	NA	NA	NA	ΝA	ΑN	NA	ΑN	Ϋ́Z	Ϋ́	VΑ	ly.	NA	•	¥.	ΝA	NA	i 	NA			
Dermal	Absorption of Surface Soil	-	AN	63E-07	AN	NA	AN	NA	VΑ	NA	NA	AN	ΑN	ΑN	AN	NA	AN	ΑN	ΑN	NA	Risks by Pathway	63E-07	· ix	V.	NA	AN	Radiological Risks by Pathway	ΑN			
Inhalation of	Aurbome Particulates	NA	AN	Ϋ́	NA	ΑN	ΑN	9 IE-12	ΑN	AN	NA	NA	AN	AN	ΑN	AN	ΑN	ΑN	ΑN	AN	Nonradiological	9 1E-12	00 00	4 05-03	1 1E-09	5 7E-08	Radiological R	6 3E-08			
	Ingestion of Seep Water	ΑN	ĄZ	ΑN	ΑN	Ϋ́	Ϋ́	ĄN	Ϋ́	Ϋ́Z	3 0E-08	NA	ĄZ	Ϋ́	٧	NA	ĄZ	1 8E-08	9 7E-10	Ϋ́Α		4 9E-08	1	V.	NA	VΑ		ΑN			
Ingestion of	Seep Sediments	Ϋ́N	ΝΑ	ΑN	ΑN	Ϋ́	AN	2 4E-07	AN	AN	ΑN	AN	ΑN	NA	ΥN	AN	ΥN	AN	AN	AN		2 4E-07	00	1 /2-03	1 4E-10	2 0E 09		3 8E-09			
	Ingestion of Surface Soil	Ϋ́	ΑN	2 6E-07	4 4E-08	3 3E-07	4 SE-08	ΥZ	ΑN	2 0E-07	A'N	Y Z	Ϋ́	S 6E-08	Ϋ́	Ϋ́	ΑN	ΑN	ΑN	NA		9 4E-07	20	1 75-08	\$ 8E-09	2 3E-07		2 SE-07			
	Chemicals of Concern	Acetone	Antimony	Aroclor 1254	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Beryllium	Copper	Dibenzo(a,h)anthracene	1 1 Dichloroethene	1 2 Dichloroethene	Fluoranthene	Indeno(1 2 3-cd)pyrene	Mercury	Pyrene	Silver	Tetrachloroethene	Trichloroethene	Zinc				Oranium 233/234	Uranium 235+D	Uranium 238+D					

"NA" = Not a COC for this pathway or no toxicity factor is available or apprornate for exposure route

**Table 6-94** Construction Worker CT Carcinogenic Risks for OU 5, AOC1

			Dermal		
	Ingestion of	Inhalation of	Absorption of	External	Total Risk
	Subsurface	Airborne	Subsurface	Radiation	by
Chemicals of Concern	Soil	Particulates	Soil	Exposure	Chemical
Antimony	NA	NA	NA	NA	NA
Aroclor 1254	2 3E-09	NA	1 4E-09	NA	3 7E-09
Benzo(a)anthracene	1 2E-09	NA	NA	NA	1 2E-09
Benzo(a)pyrene	1 1E-08	NA	NA	NA	1 1E-08
Benzo(b)fluoranthene	1 3E-09	NA	NA	NA	1 3B-09
Beryllium	4 8E-09	3 0E-14	NA	NA	4 8E-09
Cadmium	NA	1 7E-14	NA	NA	1 7E-14
Copper	NA	NA	NA	NA	NA
Dibenzo(a h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1,2 3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA
Molybdenum	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	ŅĀ	NA
Silver	NA	NA	NA	NA	NA
	N	lonradiologica	I Risks by Path	way	
	2 1E-08	4 7E-14	1 4E-09	NA	
Uranium 233/234	1 9E-10	2 5E-10	NA	4 9E-12	4 5E-10
Uranium 235+D	1 6E-11	5 5E-11	NA	1 7E-08	1 7E-08
Uranium 238+D	2 5E-10	2 9E-09	NA	1 0E-07	1 1E-07
		Radiological	Risks by Pathw		
	4 SE-10	3 2E-09	NA	1.2E-07	Ι
			Total Nonradio	ological Risk	2.2E-08
			Total Radiolog	ıcal Rısk.	1.2E-07
			Total Risk		1E-07

<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

Table 6-95
Current Security Worker CT Carcinogenic Risks for OU 5, AOC1

	į		Dermal		
	!	Inhalation of	Absorption	External	Total Risk
	Ingestion of	Airborne	of Surface	Radiation	by
Chemicals of Concern	Surface Soil	Particulates	Soil	Exposure	Chemical
Aroclor 1254	1 3E-09	NA	5 3E-09	NA	6 6E-09
Benzo(a)anthracene	2 2E 10	NA	NA	NA	2 2E 10
Benzo(a)pyrene	1 6E-09	NA	NA	NA	1 6E-09
Benzo(b)fluoranthene	2 2E 10	NA	NA	NA	2 2E 10
Copper	NA	NA	NA	NA	NA
Dibenzo(a h)anthracene	1 0E-09	NA	NA	NA	1 0E-09
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1 2 3-cd)pyrene	2 7E 10	NA	NA	NA	2 7E 10
Mercury	NA	NA	NA	NA	NA
Ругепе	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA
	No	onradiological	Risks by Path	way	
	4 7E-09	NA	5 3E-09	NA	
Uranium 233/234	2 IE 10	3 3E 10	ΝA	5 7E-12	5 5E 10
Uranium 235+D	6 3E 11	7 3E 11	NA	2 0E-08	2 0E-08
Uranium 238+D	2 5E-09	4 0E-09	NA	1 2E-07	1 3E-07
<del></del>	I	Radiological R	usks by Pathw	ay	<del></del>
	2 8E-09	4 4E-09	NA	1 4E-07	
			Total Nonradi	ological Risk	1 0E-08
	!		Total Radiolo	gical Risk	1 5E-07
· · ·			Total Risk		2E-07

Table 6-96 Ecological Worker CT Carcinogenic Risks for OU 5, AOC1

		30		1.1.1	Dermal	Dermal	Dermal		
	•	5	•	Indianam or	Apsorption	Aosorpaon	Absorption	External	Total Kusk
menacy jo slement	Ingestion of	Seep	Ingestion of	Airborne	of Surface	of Seep	of Seep	Radiation	þý
A DESCRIPTION OF CONCOLU	Sui race Sou	NA NA	Seep water	A Biticulates			Malci.	exposure	Chemean
Acetonic	UNI	-	V.	V.	4	22	4	NA.	NA
Antimony	٧×	-	NA	NA	NA	NA	٧V	ΥN	AN
Aroclor 1254	1 3E-08		NA	NA	2 2E-08	AN	VN	٧X	3 SE-08
Benzo(a)anthracene	2 1E-09		VΝ	ΥN	Ϋ́	٧V	Y.	NA NA	2 1E-09
Benzo(a)pyrene	1 6E-08		٧¥	٧Z	Ϋ́	٧×	Ϋ́	ΥN	1 6E-08
Benzo(b)fluoranthene	2 2E-09	٧V	٧V	٧X	Ϋ́	Ϋ́Z	¥	٧×	2 2E-09
Beryllium	ΨN	2 1E 09	ΥN	1 7E 12	Ϋ́	٧×	٧X	YZ.	2 1E-09
Copper	_	AN	Ϋ́Υ	Y X	Ϋ́	YZ.	¥X	YZ.	Ϋ́N
Dibenzo(a h)anthracene	60-36 6	٧V	٧V	ΥN	٧X	٧X	٧X	Ϋ́N	9 9E-09
1 1 Dichloroethene	VΥ	NA	2 3E 10	VΥ	ΥN	٧V	3 SE-09	۲×	3 7E-09
1 2 Dichloroethene	AN	NA	٧N	ΥN	NA	٧V	٧X	٧٧	٧z
Fluoranthene		NA	NA	VΝ	ΥA	٧X	¥	٧×	Ϋ́Z
Indeno(1 2 3-cd)pyrene	2 7E-09	NA	٧V	ΥV	٧X	٧V	٧X	٧×	2 7E-09
Mercury	Y'A	NA	NA	NA	ΝA	٧V	٧V	ΥN	ΥV
Pyrene	٧V	NA	ΝA	ΥN	٧V	NA	٧٧	٧٧	Ϋ́Z
Silver	٧V	NA	٧V	ΥN	NA	٧٧	۲×	Ϋ́N	Ϋ́N
Tetrachloroethene	٧V	NA	1 4E-10	VΝ	ΥA	٧N	4 9E-08	٧×	4 9E-08
Trichloroethene	٧٧	٧V	7 SE-12	٧V	٧V	٧V	1 6E-09	ΨN	1 6E-09
Zinc	٧×	ΥN	VV	٧V		NA	٧×	٧V	NA
			_	Nonradiological		thway			
	4 6E-08	2 1E-09	3 8E-10	1 7E 12	2 2E-08	٧٧	S 4E-08	NA	
Uranium 233/234	2 1E-09	3 2E-11	NA NA	9 0E-10	W	YZ.	Y.	2 SE 11	3 0E-09
Uranium-235+D	6 2E-10	2 7E-12	ž	2 0E-10	ž	YZ	ž	8 6E-08	8 7E-08
Uranium-238+D	2 4E-08	3 9E 11	٧V	1 1E-08	ΥN	NA	٧×	S 1E-07	5 5E-07
				Radiological	Radiological Risks by Pathway				
	2 7E-08	7 4E-11	٧V	1 2E-08	NA	NA	٧V	6 0E-07	
							Total Nonradiologica Risk	iologici Risk	1 2E-07
							Total Radiologici Risk	gicl Risk	6 4E-07
							Total Risk		8E-07

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"NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

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Table 6-97
Office Worker CT Carcinogenic Risks for OU 5, AOC1

			Dermal	1	
		Inhalation of	Absorption	External	Total Risk
	Ingestion of	Airborne	of Surface	Radiation	by
Chemicals of Concern	Surface Soil	Particulates	Soil	Exposure	Chemical
Aroclor 1254	1 0E-08	NA	5 2E-08	NA	6 3E-08
Benzo(a)anthracene	1 7E-09	NA	NA	NA	1 7E-09
Benzo(a)pyrene	1 3E-08	NA	NA	NA	1 3E-08
Benzo(b)fluoranthene	1 8E-09	NA	NA	NA	1 8E-09
Copper	NA	NA	NA	NA	NA
Dibenzo(a h)anthracene	8 1E-09	NA	NA	NA	8 1E-09
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1 2 3-cd)pyrene	2 2E-09	NA	NA	NA	2 2E-09
Mercury	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA
	1	Vonradiologic	al Risks by Pa	thway	
	3 7E-08	NA	5 2E-08	NA	
Uranium 233/234	1 7E-09	3 6E-09	NA NA	7 4E-11	5 4E-09
Uranium 235+D	5 0E 10	8 0E 10	NA	2 6E-07	2 6E-07
Uranium 238+D	2 0E-08	4 3E-08	NA	1 5E-06	1 6E-06
		Radiological	Risks by Path	way	
	2 2E-08	4 8E-08	NA	1 8E-06	
	!		Total Nonrad	ological Risk	9 0E-08
	<u> </u>		Total Radiolo	gical Risk	1 9E-06
	t	·	Total Risk		2E-06

Table 6-98 Open Space User CT Carcinogenic Risks for OU 5, AOC1

					Dermal	Dermal	Dermal		
		Ingestion of		Inhalation of	Absorption	Absorption	Absorption	External	Total Risk
	Ingestion of	Seep	Ingestion of	Airborne	of Surface	of Seep	of Seep	Radiation	by
Chemicals of Concern	Surface Soil	Sediments	Seep Water	Particulates	Soil	Sediments	Water	Exposure	Chemical
Acetone	NA	ΥA	VΥ	¥	AN	VΝ	ΨN	Ϋ́Α	Ϋ́N
Antimony	NA	٧V	NA	ΥV	Ϋ́	٧×	ΥN	Ϋ́N	٧X
Aroclor 1254	3 1E-08	NA	NA	ΥV	2 9E-09	¥	٧×	ΥN	3 4E-08
Benzo(a)anthracene	5 2E-09	ΝΑ	NA	NA	٧V	¥	ΨN	ΥN	5 2E-09
Benzo(a)pyrene	4 OE-08	NA	NA	ΥV	٧X	Ϋ́N	ΥN	A'N	4 0E-08
Benzo(b)fluoranthene	5 3E-09	NA	NA	Ϋ́Α	Ϋ́	٧×	٧X	AN.	\$ 3E-09
Beryllum	ΥV	3 SE 10	NA	1 9E 13	٧×	Ϋ́χ	ΥN	Ϋ́N	3 SE-10
Copper	٧×	٧×	NA	VΥ	ΑN	٧٧	٧N	NA NA	٧N
Dibenzo(a h)anthracene	2 4E-08	VΥ	NA	٧٧	٧¥	¥	٧×	ΥN	2 4E-08
Fluoranthene	٧×	٧×	NA	٧×	٧X	¥	٧×	ΥN	ΥN
Indeno(1 2 3-cd)pyrene	6 6E-09	٧X	VΥ	ΥV	NA	٧¥	ΥN	ΥN	6 6E-09
Mercury	¥z	Y'X	NA	ΥV	VΑ	Ϋ́	٧٧	ΥN	٧N
Pyrene	ž	٧×	VV	VΑ	NA	٧V	٧N	ΥN	ΥN
Silver	ž	٧V	NA	ΥV	NA	٧X	Ϋ́N	ΥN	VΑ
Tetrachloroethene	¥	٧×	4 6E-10	٧V	NA	٧X	3 1E-08	Y.	3 1E-08
Trichloroethene	٧×	٧V	2 4E-11	٧X	٧X	٧×	1 OE-09	V.	1 0E-09
Zinc	٧٧	٧٧	NA	٧٧	NA	٧V	Ϋ́	NA	VV
			Z	Nonradiological Risks by Pathway	Rusks by Pau	hway			
	115-07	3 SE-10	1 2E-09	1 9E-13	2 9E-09	NA NA	3 4E-08	٧٧	
Uranum-233/234	1 2E-09	8 SE-11	YZ	1 08-10	٧N	Y.V	¥N.	1 55-11	00 27 1
Uranium-235+D	3 SE-10	7 1B-12	٧×	2 3E-11	٧X	ž	٧×	5 2E-08	5 2E-08
Uranium 238+D	1 4E-08	1 OE-10	٧×	1 2E-09	٧٧	¥	٧×	3 15-07	3 2B-07
				13	Risks by Pathway	ł .			
	1 SE-08	1 9E-10	VN	1 3E-09	NA	NA	VΥ	3 6E-07	
							Total Nonradiological Risk	ological Risk.	1 SE-07
							Total Radiological Risk	ical Risk	20-∃8 €
							Total Risk		20-3S

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"NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

Table 6-99
Construction Worker RME Carcinogenic Risks for UO 5, AOC2

		T	Dermal		T
	Ingestion of	Inhalation of	Absorption of	External	Total Risk
	Subsurface	Aurborne	Subsurface	Radiation	by
Chemicals of Concern	Soil	Particulates	Soil	Exposure	Chemical
Antimony	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Beryllium	4 5E-08	4 4E-13	NA	NA	4 5E-08
Cadmium	NA	3 2E-13	NA	NA	3 2E-13
Copper	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1 2,3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA
Molybdenum	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA
Ругене	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	NA	NA	NA
Trichloroethene	NA	NA	NA	NA	NA
		Nonradiologic	al Risk by Pathw	ay	
	4 5E-08	7 7E-13	NA	NA	
Uranium-233/234	2 1E-09	2 9E-10	NA	3 3E-12	2 4E-09
Uranium-235+D	4 0E-10	3 7E-11	NA	2 8E-09	3 2E-09
Uranium-238+D	8 1E-09	1 5E-09	NA	2 2E-08	3 1E-08
· · · · · · · · · · · · · · · · · · ·		Radiological	Risks by Pathwa	у	
	1 1E-08	1 8E-09	NA	2 4E-08	
		1	Total Nonradio	ogical Risk.	4 5E-08
			Total Radiologi	cal Risk.	3 7E-08
			Total Risk		8E-08

Table 6-100
Current Security Worker RME Carcinogenic Risks for OU 5, AOC2

Chemicals of Concern	Ingestion of Surface Soil	1	Dermal Absorption of Surface Soil	External Radiation Exposure	Total Risk by Chemical
Benzo(a)pyrene	3.0E-08	NA	NA	NA	3 0E-08
Benzo(b)fluoranthene	5.9E-11	NA	NA	NA	5 9E-11
Copper	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	1 0E-09	NA.	NA	NA	1 0E-09
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1.5E-10	NA	NA	NA	1 5E-10
Mercury	NA	NA	NA	NA	NA
Ругеле	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA
		Nonradiologic	al Ruk by Path	Way	
	3 1E-08	NA	NA	NA	
Uranium-233/234	4.5E-09	2.2E-09	NA	4 7E-10	7 2E-09
Uransum-235+D	3.2E-10	2.8E-10	NA	3.9E-07	3.9E-07
Uranium-238+D	17E-08	1.2E-08	NA	3.0E-06	3.0E-06
	2.1E-08	1 4E-08	NA	3 4E-06	
			Total Nonradio	ogical Risk.	3 1E-08
			Total Radiologi	cal Risk.	3 4E-06
			Total Risk.		3E-06

<sup>&</sup>quot;NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route.

Table 6-101
Ecological Worker RME Carcinogenic Risks for OU 5, AOC2

	1					Dermal			
		Ingestion of		Inhalation of	Dermal	Absorption of	Dermal	External	Total Risk
	Ingestion of	Seep	Ingestion of	Aurbonne	Absorption of	Seep	Absorption of	Radiation	by
Chemicals of Concern	Surface Soil	Sediments	Seep Water	Particulates	Surface Soil	Sediments	Seep Water	Exposure	Chemical
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	2 6E-08	NA	NA	NA	NA	NA	NA	NA	2 6E-08
Benzo(b)fluoranthene	5 2E-11	NA	NA	NA	NA	NA	NA	NA	5 2E-11
Beryllium	NA	1 1E-08	NA	2 8E-12	NA	NA	NA	NA	1 1E-08
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	8 9E-10	NA	NA	NA	NA	NA	NA	NA	8 9E-10
1 1 Dichloroethene	NA	NA	1 3E-09	NA	NA	NA	3 7E-09	NA	5 0E-09
1,2 Dichloroethene	NA.	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA.	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1 3E-10	NA	NA	NA	NA	NA	NA	NA	1 3E-10
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	1 1E-10	NA	NA	NA	7 5E-09	NA	7 6E-09
Trichloroethene	NA	NA	2 3E-11	NA	NA	NA	9 8E-10	NA	1 0E-09
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Nonradiologic	al Risk by Path	way			1
	2 7E-08	1 1E-08	1 4E-09	2 8E-12	NA	NA	1 2E-08	NA	
Uranium-233/234	4 0E-09	2 8E-10	NA	1 6E-09	NA	NA	NA	1 7E-11	5 8E-09
Uranium-235+D	2 8E-10	1 9E-11	NA	2 0E-10	ÑA	NA	NA	1 4E-08	1 4E-08
Uranium 238+D	1 5E-08	73E-10	NA	8 1E-09	NA	NA	NA	1 1E-07	1 3E-07
				Radiologica	Risk by Pathw	ray			
	1 9E-08	1 0E-09	NA	9 8E-09	NA	NA.	NA	1 2E-07	
						Total Nonrad	ological Risk.		5 2E-08
						Total Radiolo	gical Risk		1 5E-07
	1					Total Risk.			2E-07

<sup>&</sup>quot;NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

# Table 6-102 Office Worker RME Carcinogenic Risks for OU 5, AOC2

Chemicals of Concern	Ingestion of Surface Soil	Inhalation of Airborne Particulates	Dermal Absorption of Surface Soil	External Radiation Exposure	Total Risk by Chemical
Benzo(a)pyrene	4 8E-07	NA	NA	NA	4.8E-07
Benzo(b)fluoranthene	9 4E-10	NA	NA	NA	9 4E-10
Copper	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	1.6E-08	NA	NA	NA	1 6E-08
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	2.4E-09	NA	NA	NA	2.4E-09
Mercury	NA	NA	NA	NA	NA
Pyrene	NA	NA.	NA	NA	NA
Silver	NA	NA	NA	NA	NA
		Nonradiologic	al Risk by Pathw	ay .	_
	5 0E-07	NA	NA	NA	
Uranium-233/234	7.28-08	3 5E-08	NA	4.7E-10	1 1E-07
Uranium-235+D	5 1E-09	4 5E-09	NA	3 9E-07	4 0B-07
Uraneum-238+D	2.7E-07	1 8E-07	NA	3 0E-06	3 5E-06
		у			
	3 4E-07	2.2E-07	NA	3 4E-06	
			<b>Total Nonradiol</b>	ogscai Rusk.	5 0E-07
	-		Total Radiologic	al Rusk.	4 0E-06
			Total Risk		4E-06

<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route



					1	Dermal		-	T
į	! !	Ingestion of		Inhalation of	Dermal	Absorption of	Dermal	External	Total Risk
į	Ingestion of	Seep	Ingestion of	Airborne	Absorption of	Seep	Absorption of	Radiation	by
Chemicals of Concern	Surface Soil	Sediments	Seep Water	Particulates	Surface Soil	Sediments	Seep Water	Exposure	Chemical
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	1 5E-07	NA	NA	NA	NA	NA	NA	NA	1 5E-07
Benzo(b)fluoranthene	3 0E-10	NA	NA	NA	NA	NA	NA	NA	3 0E-10
Beryllium	NA	2 2E-07	NA	8 0E-12	NA	NA	NA	NA	2 2E-07
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	5 2E-09	NA	NA	NA	NA	NA	NA	NA	5 2E-09
1 1 Dichloroethene	NA	NA	1 9E-08	NA	NA	NA	5 6E-08	NA	7 5E-08
1 2 Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1 2 3-cd)pyrene	7 5E-10	NA	NA	NA	NA	NA	NA	NA	7 5E-10
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	1 6E-09	NA	NA	NA	1 1E-07	NA	1 1E-07
Trichloroethene	NA	NA	3 5E-10	NA	NA	NA	1 5E-08	NA	1 5E-08
Zinc	NA NA	NA	NA	NA	NA	NA	NA	NA	NA
				Nonradiologic	al Risk by Path	way			
	1 6E-07	2 2E-07	2 1E-08	8 0E-12	NA	NA	1 8E-07	NA	
Uranium-233/234	1 0E-08	2 4E-09	NA	4 5E-09	NA NA	NA	NA.	6.7E-11	1.75.00
Uranium-235+D	7 4E-10	1 6E-10	NA NA						1 7E-08
Uranium-238+D				5 7E-10	NA NA	NA	NA NA	5 6E-08	5 7E-08
Olanum-238+D	3 8E-08	6 2E-09	NA	2.3E-08	NA D. J. L. D. B.	NA	NA	4 3E-07	5 0E-07
<del></del>	4 9E-08	8 8E-09	NA	2 8E-08	Risk by Pathw	NA NA	NA	4 9E-07	<del> </del>
	4 7E-08	6 6E-U9	NA	2 8E-U8	NA			4 96-07	5 OF 07
	<del>   </del>			ļ	ļ	Total Nonradi		<del></del>	5 8E-07
	<del> </del>	<u> </u>		ļ	<b></b>	Total Radiolo	gical Kisk.		5 7E-07
				l	i	Total Risk			1E-06

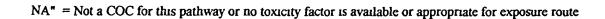




Table 6-104
Construction Worker CT Carcinogenic Risks for OU 5, AOC2

		<u> </u>	Dermal		
	Ingestion of	Inhalation of	Absorption of	External	Total Risk
	Subsurface	Airborne	Subsurface	Radiation	by
Chemicals of Concern	Soil	Particulates	Soil	Exposure	Chemical
Antimony	ŇA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Beryllium	8 0E-09	3 6E 13	NA	NA	8 0E-09
Cadmium	NA	2 6E-13	NA	NA	2 6E-13
Copper	NA	NA	NA	NA	NA
Dibenzo(a h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1 2 3-cd)pyrene	NA	NA	NA	NA	NA
Мегсигу	NA	NA	NA	NA	NA
Molybdenum	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA
		Nonrac	hological Risks	by Pathway	
	8 0E-09	6 1E-13	NA	NA	
Uranium-233/234	3 8E-10	2 3E-10	NA	2 7E-12	6 2E-10
Uranium 235+D	7 IE-11	3 0E-11	NA	2.2E-09	2 3E-09
Uranium 238+D	1 4E-09	1 2E-09	NA NA	1 7E-08	2 0E-08
			Risks by Pathwa		
	1 9E-09	1 5E-09	NA	1 9E-08	
			Total Nonradio	logical Risk	8 0E-09
			Total Radiologi	cal Risk.	2 3E-08
			Total Risk		3E-08

NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

Table 6-105
Current Security Worker CT Carcinogenic Risks for OU 5, AOC2

	ļ		Dermal		
	i	Inhalation of	Absorption	External	Total Risk
	Ingestion of	Airborne	of Surface	Radiation	by
Chemicals of Concern	Surface Soil	Particulates	Soil	Exposure	Chemical
Benzo(a)pyrene	7 5E 10	NA	NA	NA	7 5E 10
Benzo(b)fluoranthene	1 5E 12	NA	NA	NA	1 5E-12
Copper	NA	NA	NA	NA	NA
Dibenzo(a h)anthracene	2 6E 11	NA	NA	NA	2 6E 11
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1 2 3-cd)pyrene	3 7E 12	NA	NA	NA	3 7E 12
Mercury	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA
	ì	Nonradiologic	al Risks by Pa	thway	]
	7 8E 10	NA	NA	NA	
Uranium 233/234	1 1E 10	3 IE 10	NA.	4 0E-11	4 6E 10
Uranium 235+D	8 1E 12	3 9E 11	NA	3 3E-08	3 3E-08
Uranium 238+D	4 2E 10	1 6E-09	NA	2 6E-07	2 6E-07
		Radiological	Risks by Path	way	
	5 4E 10	2 0E-09	NA	2 9E-07	
			Total Nonradi	ological Risk	7 8E 10
			Total Radiolo	gical Risk	2 9E-07
	, :		Total Risk		3 0E-07

Table 6-106
Ecological Worker CT Carcinogenic Risks for OU 5, AOC2

					Dermal	Dermal	Dermal		I
		Ingestion of		Inhalation of	Absorption	Absorption	Absorption	External	Total Risk
	Ingestion of		Ingestion of	Airborne	of Surface	of Seep	of Seep	Radiation	by
Chemicals of Concern		•	Seep Water	Particulates	Soil	Sediments	Water	Exposure	Chemical
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	7 4E-09	NA	NA	NA	NA	NA	NA	NA	7 4E-09
Benzo(b)fluoranthene	1 4E-11	NA	NA	NA	NA	NA	NA	NA	1 4E-11
Beryllium	NA	1 9E-09	NA	1 5E-12	NA	NA	NA	NA NA	1 9E-09
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a h)anthracene	2 5E-10	NA	NA	NA	NA	NA	NA	NA	2 5E-10
1 1 Dichloroethene	NA	NA	1 5E-10	NA	NA	NA	2 2E-09	NA	2 3E-09
1 2 Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA -	NA	NA	NA	NA	NA	NA
Indeno(1 2 3-cd)pyrene	3 6E-11	NA	NA	NA	NA	NA	NA	NA	3 6E 11
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum	NA	NA	NA	NA	NA	NA	NA	NA	NA NA
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ругеле	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	NA	NA	1 3E-11	NA	NA	NA	4 4E-09	NA	4 4E-09
Trichloroethene	NA	NA	2 7E-12	NA	NA	NA	5 7E 10	NA	5 8E-10
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1	Nonradiologica	l Risks by Pa	thway			
	7 7E-09	1 9E-09	1 6E-10	1 5E-12	NA	NA	7 1E-09	NA	<u> </u>
Uranium 233/234	1 1E-09	4 6E-11	NA	8 3E-10	NA	NA	NA	1 3E-11	2 0E-09
Uranum 235+D	7 9E-11	3 2E 12	NA	1 0E-10	NA	NA	NA	1 1E-08	1 1E-08
Uranum 238+D	4 1E-09	1 2E-10	NA	4 3E-09	NA	NA	NA	8 6E-08	9 5E-08
		<u> </u>	<del></del>	Radiological	Risks by Path	way			
	5 3E-09	1 7E-10	NA	5 3E-09	NA	NA	NA	9 7E-08	
						Total Nonrac	hological Risk		1 7E-08
						Total Radiole	ogical Risk	L	1 1E-07
			-			Total Risk			1E-07

NA = no toxicity factor is available or appropriate for exposure route

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Table 6-107
Office Worker CT Carcinogenic Risks for OU 5, AOC2

			Dermal	<del></del>	í
		Inhalation of		i External	Total Risk
	Ingestion of		of Surface	Radiation	by
Chemicals of Concern		Particulates	Soil	Exposure	Chemical
Benzo(a)pyrene	6 0E-09	NA.	NA	NA.	6 0E-09
Benzo(b)fluoranthene	1 2E 11	NA NA	NA NA	NA	1 2E 11
<del></del>	NA NA	NA NA	NA NA	NA NA	NA NA
Copper Dibenzo(a h)anthracene	2 0E 10	NA NA	NA NA	NA NA	2 0E 10
Fluoranthene	NA NA	NA NA	NA NA	NA NA	NA NA
					3 0E 11
Indeno(1 2 3-cd)pyrene	3 0E 11	NA	NA	NA	
Mercury	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA _	NA
Silver	NA	NA	NA	NA	NA
	l N	Vonradiologic	al Risks by Par	thway	
	6 3E-09	NA	NA	NA	
Uranium 233/234	9 IE 10	3 4E-09	NA	4 0E 11	4 3E-09
Uranium 235+D	6 5E 11	4 3E-10	NA	3 3E-08	3 4E-08
Uranium 238+D	3 3E-09	1 8E-08	NA	2 6E-07	2 8E-07
		Radiological	Risks by Path	way	
	4 3E-09	2 1E-08	NA	2 9E-07	
			Total Nonradi	ological Risk	6 3E-09
			Total Radiolo	gical Risk	3 2E-07
			Total Risk		3E-07

Table 6-108
Open Space User CT Carcinogenic Risks for OU 5, AOC2

					Dermal	Dermal	Dermal		
	-	Ingestion of		Inhalation of	Absorption	Absorption	Absorption	External	Total Rusk
	Ingestion of	Seep	Ingestion of	Airborne	of Surface	of Seep	of Seep	Radiation	à
Chemicals of Concern	Surface Soil	ઝ	Seep Water	Particulates	Soil	Sediments	Water	Exposure	Chemical
Antimony	NA	٧V	ΝĀ	٧V	ΑΝ	Ϋ́N	٧N	AN	Ϋ́N
Benzo(a)pyrene	1 8E 08	NA	NA	NA	Ϋ́	Ϋ́	٧×	AN	1 8E-08
Benzo(b)fluoranthene	3 6E 11	NA	NA	NA	ΝA	٧N	٧×	Ϋ́	3 6E 11
Beryllum	NA	2 1E-08	NA	1 7E-13	ΥN	Ϋ́	٧×	٧X	2 1E-08
Copper	NA	NA.	NA	VV	ΥN	¥	ž	AN	٧×
Dibenzo(a h)anthracene	6 2E 10	NA	NA	NA	٧V	٧٧	ž	٧×	6 2E-10
1 Dichloroethene	٧N	VΥ	4 7E 10	NA	ΥV	٧X	1 4E-09	Ϋ́N	1 8E-09
2 Dichloroethene	NA	NA	NA	٧V	ΝA	Ϋ́	¥	٧٧	ΥN
Fluoranthene	NA	VΥ	NA	VV	VN	٧N	٧×	Ϋ́N	٧X
Indeno(1 2 3-cd)pyrene	9 0E-11	٧¥	NA	NA	٧X	٧X	٧×	Ϋ́N	9 0E-11
Mercury	NA	ΥA	NA	AN	٧N	٧×	¥	Ϋ́N	AN
Pyrene	NA	NA	NA	NA	٧N	٧N	٧X	٧X	Ϋ́N
Silver	NA	NA	NA	NA	ΥN	٧N	¥	ΥN	ΥN
Tetrachloroethene	٧¥	VV.	4 1E 11	NA	٧N	٧N	2 8E-09	Ϋ́N	2 8E-09
Trichloroethene	NA	٧¥	8 6E-12	NA	Ϋ́	٧N	3 6E 10	Ϋ́N	3 7E-10
Zınc	NA	VΥ	NA	٧V	٧V	٧V	٧×	Ϋ́N	Ϋ́N
			2	Nonradiological	I Risks by Pathway	thway			
	1 9E-08	2 IE-08	S 2E-10	1 7E-13	Ϋ́	٧٧	4 SE-09	ΝΑ	
100 cc	01 20 7	01 00 .	7.7.	250				27	
1 Iranium-235+D	4 SE-11	8 4R-12	₹ <b>2</b>	1 2E-11	\$ <b>1</b>	V. 2	¥ 2	6 UE-12	8 05-10
Uranium 238+D	2 3E-09	3 2E-10	×	S 0E-10	ž	¥.	Y X	5 2R.Os	5 SE OR
				Radiological	Radiological Risks by Pathway	١.			
	3 OE-09	4 SE-10	VΥ	6 1E-10	¥	×	٧×	5 8E-08	
						Total Nonrad	Total Nonradiological Risk		4 SE-08
						Total Radiolo	gical Risk		6 2E-08
						Total Risk			18-07

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NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

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	Ingestion of Pond	Ingestion of Stream	Ingestion of Surface	Inhalation of Airborne	Dermal Absorption of Pond	Dermal Absorption of Stream	Dermal Absorption of Surface	External Radiation	Total Risk by
Chemicals of Concern	Sediments	Sediments	Water	Particulates(1)	Sediments	Sediments	Water	Exposure	Chemical
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lithium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA	ΝA	NA	NA
Strontium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	ΝA	NA	NA
				Nonradiologic	al Risks by Path	way		-	
	NA	NA	NA	NA	NA	NA	NA	NA	
Americium-241	4 7E-10	3 0E-10	3 9E-11	4 4E-12	NA	NA	NA	2 0E-10	1 0E-09
Plutonium 239/240	2 5E-09	1 6E-09	NA	1 7E-11	NA	NA	NA	3 0E-12	4 1E-09
Uranıum 233/234	4 6E-10	NA	1 2E-10	NA	NA	NA	NA	NA	5 8E-10
Uranıum-235+D	3 1E-11	NA	NA	NA	NA	NA	ΝA	NA	3 1E-11
Uranıum 238+D	5 7E-10	NA	2 0E-10	NA	NA	NA	NA	NA	7 7E-10
				Radiologica	Risks by Pathw	ray			
	4 0E-09	1 9E-09	3 6E-10	2 2E-11	NA	NA	NA	2 0E-10	
							Total Nonradi	ological Risk	NA
	Ţ						Total Radiolog	gical Risk	6 5E-09
	T						Total Risk		7E-09

<sup>(1)</sup> Includes only contributions from stream sediments

Table 6-110
Open Space User RME Carcinogenic Risks for OU 5, AOC3

Chemicals of Concern	Ingestion of Pond Sediments	Ingestion of Stream Sediments	Ingestion of Surface Water	Inhalation of Airborne Particulates <sup>(1)</sup>	Dermal Absorption of Pond Sediments	Dermal Absorption of Stream Sediments	Dermal Absorption of Surface Water	External Radiation Exposure	Total Risk by Chemical
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lethium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Nonradiologic	al Risks by Path	way			
	NA	NA	NA	NA	NA	NA	NA	NA	
Americium-241	4 0E-09	2 6E-09	5 9E-10	1.3E-11	NA	NA	NA	8 0E-10	8 0E-09
Plutonium-239/240	2 1E-08	1 4E-08	NA	5 0E-11	NA	NA	NA	1 2E-11	3 5E-08
Uranium-233/234	3 9E-09	NA	1 9E-09	NA	NA	NA	NA	NA	5 8E-09
Uranıum-235+D	2 7E-10	NA	NA	NA	NA	NA	NA	NA	2 7E-10
Uranıum-238+D	4 9E-09	NA	2.9E-09	NA	NA	NA	NA	NA	7 8E-09
<u> </u>	1			Radiologica	Rasks by Pathw	ay			
	3 4E-08	1 6E-08	5 4E-09	6.3E-11	NA	NA.	NA	8 1E-10	
					<del> </del>		Total Nonradio	ological Risk.	NA
	<del> </del>				<u> </u>	<del> </del>	Total Radiolog		5 7E-08
	<del> </del>				<del> </del>		Total Risk.	<u></u>	6E-08

<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route



<sup>(1)</sup> Includes only contributions from stream sediments.

Table 6-111
Ecological Worker CT Carcinogenic Risks for OU 5, AOC3

				Inhalation of	Dermal	Dermal	Dermal		[
	Ingestion	Ingestion of	Ingestion of	Airborne	Absorption of	Absorption	Absorption	External	Total Risk
	of Pond	Stream	Surface	Particulates(1)	Pond	of Stream	of Surface	Radiation	by
Chemicals of Concern	Sediments	Sediments	Water	(mg/kg-day)	Sediments	Sediments	Water	Exposure	Chemical
Barium	NA	NA	NA	NA	NA .	NA	NA	NA	NA
Copper	NA	NA	ΝA	NA	NA	NA	NA	NA	NA
Lithium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA I	NA	NA	NA	NA
Strontium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Nonradiologic	al Risks by Path	way			
	NA	NA	NA	NA	NA	NA	NA	NA	
Americium 241	7 7E 11	4 9E 11	4 6E 12	2 3E 12	NA	NA	NA	1 6E 10	2 9E-10
Plutonium 239/240	4 1E 10	2 6E 10	NA	9 3E 12	NA	NA	NA	2 4E 12	6 8E-10
Uranium 233/234	7 5E-11	NA	1 5E 11	NA	NA	NA	NA	NA	9 0E-11
Uranium 235+D	5 IE 12	NA	NA	NA	NA	NA	NA	NA	5 1E-12
Uranium 238+D	9 3E 11	NA	2 3E 11	NA	NA	NA	NA	NA	1 2E-10
				Radiological	Risks by Pathw	ay			
	6 6E 10	3 1E 10	4 2E 11	1 2E 11	NA .	NA	NA	1 6E 10	
							Total Nonrad	iological Risk	NA
			i			-	Total Radiolo	gical Risk	1 2E-09
					<del>  </del>		Total Risk	· <del>T</del>	1E-09

NA = Not a COC for this pathway or no toxicity value available or appropriate for exposure route



<sup>(1)</sup> Includes only contribution from stream sediments

					Dermal	Dermal	Dermal		I
	Ingestion	Ingestion of	Ingestion of	Inhalation of	Absorption of	Absorption	Absorption	External	Total Risk
	of Pond	Stream	Surface	Airborne	Pond	of Stream	of Surface	Raduation	by
Chemicals of Concern	Sediments	Sediments	Water	Particulates(1)	Sediments	Sediments	Water	Exposure	Chemical
Barium	NA	NA	NA	NA	NA	, NY	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lithium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
Strontium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA.	NA	NA	NA	NA	NA	NA
				Nonradiologic	al Risks by Pati	way			
	NA	NA	NA	NA	NA	NA	NA	NA	
Americium-241	2 0E 10	1 3E-10	1 5E-11	2 7E-13	NA	NA.	NA.	9 6E-11	4 4E-10
Plutonium-239/240	1 1E-09	7 0E-10	NA	1 1E-12	NA	NA	NA	1 5E-12	1 8E-09
Uranium 233/234	2 0E-10	NA	4 7E-11	NA	NA	NA	NA .	NA	2.5E-10
Uranum-235+D	1 4E-11	NA	NA	NA	NA	NA	NA	NA	1 4B-11
Uranium-238+D	2 5E-10	NA	7 4E-11	NA	NA	NA	NA	NA	3 2E-10
	Radiological Risks by Pathway								
	1 7E-09	8 3E-10	1 4B-10	1 3E-12	NA	NA	NA	9 7E 11	
							Total Nonrad	iological Risk	NA
							Total Radiolo	gical Risk	2 8E-09
							Total Risk		3E-09

<sup>(1)</sup> Includes only contributions from stream sediments

NA = Not a COC for this pathway or no toxicity value available or appropriate for exposure route

Table 6-113
Construction Worker RME Noncarcinogenic Hazard Indices for OU 5, AOC1

<del></del>			Dermal		
	Ingestion of	Inhalation of	Absorption of	External	Total HI
	Subsurface	Airborne	Subsurface	Radiation	by
Chemicals of Concern	Soil	Particulates	Soil_	Exposure	Chemical
Antimony	0 010	NA	NA	NA	0 010
Aroclor 1254	0 006	NA	0 0035	NA	0 01
Benzo(a)anthracene	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Beryllium	0 00009	NA	NA	NA	0 00009
Cadmium	0 0003	NA	0 00003	NA	0 0004
Copper	0 0006	٧A	NA	NA	0 0006
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	NA.	NA	NA	NA	NA
Indeno(1 2,3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	NA	0 000000001	NA	NA	0 000000001
Molybdenum	0 003	NA	NA	NA	0 003
Nickel	0 0006	NA	NA	NA	0 001
Pyrene	NA	NA	NA	NA	NA
Silver	0 0003	NA	NA	NA_	0 0003
	Nonradiological Hazard Indices by Pathway				
	0 02	0 000000001	0 004	ΝA	
Uranium 233/234	NA NA	NA	NA.	NA	NA NA
Uranium 235+D	NA	NA	NA	NA	NA
Uranium 238+D	NA	NA	NA	NA	NA
	Ra	diological Haza	rd Indices by Pat	hway	
	NA	NA	NA	NA	
· · · · · · · · · · · · · · · · · · ·			Nonradiological	Hazard Index	0 02
			Radiological Ha	zard Index	NA
			Total Hazard In	dex	0 02

Chemicals of Concern	Ingestion of Surface Soil	Inhalation of Airborne Particulates	Dermal Absorption of Surface Soil	External Radiation Exposure	Total HI by Chemical
				NA	0.005
Aroclor 1254	0 0009	NA	0 004		
Benzo(a)anthracene	NA	NA	NA	NA	NA_
Вепло(а)ругене	NA	NA NA	NA	NA	NA NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Copper	0 00002	NA	NA	NA	0 00002
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA_
1 1 Dichloroethene	NA	NA	NA	NA	NA
1,2 Dichloroethene	NA	NA	NA	NA	NA
Fluoranthene	0 0000014	NA	NA	NA	0 0000014
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	0 00001	0 0000000003	NA	NA	0 00001
Pyrene	0 0000017	NA.	NA	NA	0 0000017
Silver	0 00001	NA	NA	NA	0 00001
	Not	radiological Haz	ard Indices by Pat	hway	
	0 0010	0 0000000003	0 004	NA	
Uranium-233/234	NA	NA	NA	NA	NA
Uranıum-235+D	NA	NA	NA	NA	NA
Uranium-238+D	NA	NA	NA	NA	NA_
·	R	adiological Haza	rd Indices by Path	Way	
	NA	NA	NA	NA	
			Nonradiological	Hazard Index:	0 005
			Radiological Haz	ard Index:	NA
	<u> </u>		Total Hazard Ind		0 005

<sup>&</sup>quot;NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route



Table 6 115 Ecological Worker RME Noncarcinogenic Hazard Indices for OU 5, AOC1

		Ingestion of		Inhalation of	Dermal	Dermal	Dermal	External	Total HI
Chemicals of Concern	Ingestion of Surface Soil	Seep	Ingestion of Seep Water	Aurborne	Absorption of Surface Soil	Absorption of Seep Sediments	Absorption of Seep Water	Radiation	by Chemical
Acetone	AN	NA	0 00002	ΑN	NA	NA	0 000002	Ϋ́	0 00002
Antimony	NA	100	AN	AN	٧X	ΝΑ	Ϋ́	VΑ	0 01
Aroclor 1254	800 0	Ϋ́Z	AN	NA	0 02	NA	NA	٧V	0 03
Benzo(a)anthracene	AN	Ϋ́Z	NA	NA	NA	NA	NA	NA	VΑ
Benzo(a)pyrene	NA	۸×	٧٧	NA	٧N	VN	NA	NA	NA
Benzo(b)fluoranthene	ΑN	Ϋ́Z	ΥN	VΑ	NA	NA	NA	VV	NA
Beryllium	ΑN	0 00002	ΝΑ	NA	NA	NA	NA	NA	0 00002
Copper	0 0002	AN	NA	ΑN	ΑN	NA	NA	NA	0 0002
Dibenzo(a,h)anthracene	ΑN	AN	ĄZ	ΑΝ	NA	NA	NA	NA	NA
1 1 Dichloroethene	Ϋ́Α	ĄZ	1000000	NA	NA	NA	£0000 0	NA	0 00004
1 2 Dichloroethene	AN	ΑX	0 00001	NA	NA	ΝΑ	0 00002	NA	0 00003
Fluoranthene	0 000013	Ϋ́Α	ΑΝ	ΥV	ΑN	NA	AN	NA	0 000013
Indeno(123-cd)pyrene	ΑN	Ϋ́Z	ΥA	ΑN	AN	VN	VN	NA	NA
Mercury	0 0001	Ϋ́	NA	0 000000000	NA	NA	NA	NA	0 0001
Pyrene	0 000015	AN	VΑ	VN	NA	NA	ΑN	NA	0 000015
Silver	60000 0	AN	NA	NA	NA	NA	AN	NA	0 00000
Tetrachloroethene	Ϋ́Α	ΑN	200000	NA	NA	NA	\$00.0	NA	0 005
Trichloroethene	AA	ΑN	ΑN	ΨN	NA	NA	AN	NA	NA
Zinc	AA	0 00001	ΝA	NA	NA	NA	AN	NA	0 00001
			Ň	Nonradiological Hazard Indices by Pathway	azard Indices b	y Pathway			
	600 0	900 0	10000	2000000000	0 02	NA	0 003	NA A	
1  renum 233/234	ΑZ	ĄZ	AN	ΑN	AN	AN	AN A	ĄN	A'N
Uranium 235+D	Š	A'X	ĄZ	Ϋ́Υ	AN	AN	AN	AN	NA
Uranium 238+D	AN	٧×	AN	AN	Y'A	ΑN	Ϋ́Z	AN	NA
			•	Radiological Hazard Indices by Pathway	and Indices by	Pathway			
	A'N	ΥN	ΥN	ΝA	NA	NA	NA	NA	
							Nonradiologica	Nonradiological Hazard Index	0.04
							Radiological Hazard Index	azard Index:	NA
							Total Hazard Index	ndex	0.04

"NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

Chemicals of Concern	Ingestion of Surface Soil	Inhalation of Ariborne Particulates	Dermal Absorption of Surface Soil	External Radiation Exposure	Total HI by Chemical
Aroclor 1254	0 015	NA	0 04	NA	0 05
Benzo(a)anthracene	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Copper	0 0003	NA	NA	NA	0 0003
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	0 00002	NA	NA	NA	0 00002
Indeno(1 2,3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	0 0002	0 000000005	NA	NA	0 0002
Ругене	0 00003	NA	NA	NA	0 00003
Silver	0 0002	NA	NA	NA	0 0002
	Nonradiological Hazard Indices by Pathway				
	0 0 1 6	0 000000005	0 04	NA	
Uranıum-233/234	NA	NA	NA	NA	NA
Uranium-235+D	NA	NA	NA	NA	NA
Uranium-238+D	NA	NA	NA	NA	NA
	I	Radiological He	zard Indices by Pa	thway	
	NA	NA	NA	NA.	
			Nonradiological I	lazard Index:	0 05
			Radiological Hazi	ard Index:	NA
			Total Hazard Inde	ex:	0.05

<sup>&</sup>quot;NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for this exposure route

Adult Open Space User RME Noncarcinogenic Hazard Indices for OU 5, AOC1 **Table 6 117** 

300000000	Ingestion of		Inhalation of	Dermal	Dermal	Dermal	External	Total HI
Surface Soil	Seep Sediments	Ingestion of Seep Water	Aurborne Particulates	Absorption of Surface Soil	Absorption of Seep Sediments	Absorption of Seep Water	Radiation Exposure	by Chemical
AN	AN	0 00002	Ϋ́N	ΑN	NA	0 000002	AN	0 00002
NA	0 004	٧V	AN	ΑΝ	NA	ΑN	NA	0 004
0 0015	NA	NA	ΥN	0100	NA	VΝ	NA	100
NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	VΑ	NA	NA	NA
AN	NA	ΑN	ΑN	ΥN	ΝA	VN	NA	AN
Y.	0 000010	AN	ΥN	ΑN	ΑN	ΥN	NA	0100000
0 00003	ΑN	AN	Ϋ́	AN	NA	ΥN	NA	0 00003
AN	NA	AN	NA	ΑN	ΑN	ΥN	NA	AN
A'N	ΑΝ	0 00001	NA	AN	NA	0 00004	A'A	0 00005
A'N	AN	0 00001	AN	AN	ΑΝ	0 00002	Ϋ́Α	0 00004
000000	Ϋ́Χ	NA	٧Z	ΑN	ΑN	ΥN	A'A	0 000002
NA	NA	ΑN	NA	ΑN	NA	ΑN	NA	NA
0 00002	NA	NA	0 000000001	NA	VΝ	VΝ	NA	0 00002
000003	NA	AN	NA	A'A	NA	VΥ	NA	0 000003
0 00002	NA	NA	NA	AN	NA	NA	NA	0 00002
NA	NA	80000 0	NA	AN	NA	900 0	NA	0 00572
NA	AN	NA	NA	AN	٧N	AN	NA	NA
NA	0 00001	NA	NA	NA	NA	ΑN	NA	0 00001
		Ŋ	Norradiological Hazard Indices by Pathway	card indices by	/ Pathway			
0 0016	0 004	0 0001	0 000000001	100	NA	900 0	AN	
AN N	NA	AN	NA	AA	NA	νA	NA	AA
NA	NA	NA	NA	NA.	NA	NA	NA	AN
NA	AN	NA	NA	NA	NA	NA	NA	NA
		R	Radiological Hazard Indices by Pathway	ard Indices by I	Pathway			
NA	NA	NA	NA	AN	NA	NA	NA	
					Nonradiological Hazard Index	Iszard Index		0 02
					Radiological Hazard Index	ard Index		NA
					Total Hazard Index	×		0 02

"NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

Table 6-118
Child Open Space User RME Noncarcinogenic Hazard Indices for OU 5, AOC1

	1		
			Total HI
		Ingestion of Seep	by
Chemicals of Concern	Ingestion of Surface Soil	Sediments	Chemical
Antimony	NA.	0 04	0 04
Aroclor 1254	0 014	NA	0 014
Benzo(a)anthracene	NA	NA	NA
Benzo(a)pyrene	NA NA	NA	NA
Benzo(b)fluoranthene	NA.	NA	NA
Beryllium	NA	0 00009	0 00009
Copper	0 0003	NA	0 0003
Dibenzo(a,h)anthracene	NA	NA	NA
Fluoranthene	0 00002	NA	0 00002
Indeno(1,2,3-cd)pyrene	NA	NA	NA
Mercury	0 0002	NA	0 0002
Pyrene	0 00003	NA NA	0 00003
Silver	0 0001	NA	0 0001
Zinc	NA	0 0001	0 0001
	Nonradiological Hazard	indices by Pathway	
	0 015	0.04	
Uranium-233/234	NA NA	NA	NA
Uranium-235+D	NA.	NA	NA
Uranium-238+D	NA	NA	NA
<del></del>	Radiological Hazard In	dices by Pathway	
	NA	NA	
	Norradiological Hazard Index	:	0 05
	Radiological Hazard Index:		NA
	Total Hazard Index:		0.05

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<sup>&</sup>quot;NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

## Table 6-119 Construction Worker CT Noncarcinogenic Hazard Indices for OU 5, AOC1

			Dermai		7
	Ingestion of	Inhalation of	Absorption of	External	Total HI
	Subsurface	Airborne	Subsurface	Radiation	by
Chemicals of Concern	Soil	Particulates	Soil	Exposure	Chemical
Antimony	0 0018	NA	NA	NA	0 0018
Arocior 1254	0 0011	NA	0 0006	NA	0 002
Benzo(a)anthracene	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA.	NA	NA	NA
Beryllium	0 00002	NA	NA	NA	0 00002
Cadmium	0 00006	NA	0 000006	NA	0 00007
Copper	0 0001	NA	NA	NA	0 0001
Dibenzo(a h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1 2 3-cd)pyrene	NA	NA	NA	NA	NA
Мегсигу	NA	0 0000000009	NA	NA	0 0000000009
Molybdenum	0 0005	NA	NA	NA	0 0005
Nickel	0 0001	NA	NA	NA	0 0001
Ругепе	NA	NA	NA	NA	NA
Silver	0 00004	NA	NA	NA	0 00004
		Nonradiologic	al Hazard Indic	es by Pathway	
	0 004	0 0000000009	0 0006	NA	
Uranium 233/234	NA	NA	NA NA	NA	NA NA
Uranium 235+D	NA	NA	NA	NA	NA
Uranium 238+D	NA	NA	NA	NA	NA
	Rad	ological Hazard	Indices by Pati	lway	
	NA	NA	NA	NA	
		Total Nonradio	logical Hazard	Index	0 004
		Total Radiologi	cal Hazard Inde	ex	NA
		Total Hazard Ir	ndex		0 004

Table 6-120
Current Security Worker CT Noncarcinogenic Hazard Indices for OU 5, AOC1

			Dermal	<del></del>	J
		Inhalation of	Absorption	External	Total HI
	Ingestion of	Airborne	of Surface	Radiation	by
Chemicals of Concern	Surface Soil	Particulates	Soil	Exposure	Chemical
Aroclor 1254	0 00015	NA	0 0006	NA	0 0008
Benzo(a)anthracene	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Copper	0 000003	NA	NA	NA	0 000003
Dibenzo(a h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	0 0000002	NA	NA	NA	0 0000002
Indeno(1 2 3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	0 000002	0 0000000003	NA	NA	0 000002
Pyrene	0 0000003	NA	NA	NA	0 0000003
Silver	0 000002	NA	NA	NA	0 000002
	Non	radiological Hazi	ard Indices by	Pathway	
	0 00016	0 0000000003	0 0006	NA	
Uranium 233/234	NA	NA	NA.	NA.	NA.
Uranum-235+D	NA	NA	NA	NA	NA
Uranium 238+D	NA	NA	NA	NA	NA
	Ra	diological Hazard	Indices by Pr	thway	
	NA	NA	NA	NA	
		Total Nonradiol	ogical Hazard	Index	0 001
		Total Radiologic			NA
		Total Hazard Inc			0 001

NA" = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

Ecological Worker CT Noncarcinogenic Hazard Indices for OU 5, AOC1 **Table 6-121** 

:					Dermal	Dermal	Dermal		
		Ingestion of		Inhalation of	Absorption	Absorption	Absorption	External	
	Ingestion of	Seep	Ingestion of	Airborne	of Surface	of Seep	of Seep	Radiation	Total HI by
Chemicals of Concern Su	Surface Soil	Sediments	Seep Water	Particulates	Soil	Sediments	Water	Exposure	Chemical
Acetone	٧N	ΑN	0 000000	ΨN	Ϋ́Α	Ϋ́Ν	9 9E 07	ΥN	0 000003
Antimony	I Y N	0 0010	Y Z	ΨN	Ϋ́Z	Ϋ́Α	Ϋ́Α	Ϋ́	0 001041
Aroclor 1254	0 002	Ϋ́Z	YZ Z	٧×	0 004	Ϋ́	Ϋ́Ζ	٧X	0 01
Benzo(a)anthracene	YZ YZ	Ϋ́	Ϋ́Α	٧×	ΑN	ΝA	Ϋ́Α	Ϋ́	ΥN
Benzo(a)pyrene	Ϋ́	٧٧	Y.	AN	ΑΝ	AN	Ϋ́Z	Ϋ́Α	Ϋ́Α
Benzo(b)fluoranthene	Ϋ́	٧×	ΝΑ	٧X	ΥZ	ΥN	ΑN	NA	ΥN
Beryllium	ΥV	0 000003	NA	AN	٧N	ΝΑ	NA	Y.	NA
Copper	0 000005	ΑN	NA	ΑN	Ϋ́	ΥN	Ϋ́Z	Y'A	0 00005
Dibenzo(a h)anthracene	Ϋ́	ΑN	Ϋ́	Ϋ́	٧×	ΝA	ΥN	Ϋ́Α	ΥN
1 1 Dichloroethene	_	NA	0 000001	NA	ΝΑ	NA	0 00002	NA	0 000019
1 2 Dichloroethene	¥Z	ΨZ	0 000001	Ϋ́	Ϋ́	ΥN	0 00001	ΑN	0 000012
Fluoranthene	0 000004	Ϋ́	NA	NA	NA	NA	ΥN	NA	0 000004
Indeno(1 2 3 cd)pyrene	Y X	AN	Ϋ́Α	Ϋ́	ΝΑ	ΑN	Ϋ́	A'A	Ϋ́Х
Mercury	<u> </u>	Ϋ́	Ϋ́Α	0 000000003	ΑN	Ϋ́	Ϋ́	Y.	0 00003
Pyrene	0 000004	ΑN	ΝΑ	NA	NA	V V	ΥN	٧X	0 000004
Silver	0 00002	ΥV	NA	NA	NA	NA	٧٧	NA	0 00002
Tetrachloroethene	Ϋ́Α	Ϋ́	0 000008	NA	NA	NA	0 003	NA	0 002633
Trichloroethene	Ϋ́Υ	Ϋ́	NA	NA	NA	NA	NA	ΑN	AN
Zinc	Ϋ́	0 000002	NA	NA	AN	NA	NA	NA	0 000002
			Non	Nonradiological Hazard Indices by	ard Indices by	/ Pathway			
	0 003	0 0010	0 00001	0 000000003	0 004	ΨN	0 003	NA	
Uranium 233/234	ΝΑ	NA N	NA	NA	A'N	ΥN	AN	NA	Ϋ́
Uranium 235+D	ΥN	ΑN	NA	ΑN	AN	NA	ΥN	NA A	NA NA
Uranium 238+D	Ϋ́Ν	¥	NA AN	Y.	ΥN	ΑN	Ϋ́Z	Y.	Ϋ́
				Radiological Hazard Indices by	d Indices by	Pathway			
	Ϋ́	NA	NA	NA	٧N	NA	٧N	NA	
						Total Nonrad	Total Nonradiological Hazard Index	rd Index	100
						Total Radiolo	Total Radiological Hazard Index	ndex	NA
	   					Total Hazard Index	Index		10 0

NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure routes

Table 6-122
Office Worker CT Noncarcinogenic Hazard Indices for OU 5, AOC1

Chemicals of Concern	Ingestion of Surface Soil		Dermal Absorption of Surface Soil	External Radiation Exposure	Total HI by Chemical
Aroclor 1254	0 0012	NA	0 006	NA	0 007
Benzo(a)anthracene	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Copper	0 00003	NA	NA	NA	0 00003
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	0 0000018	NA	NA	NA	0 0000018
Indeno(1 2 3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	0.00002	0 000000003	NA	NA	0 00002
Pyrene	0 000002	NA	NA	NA	0 000002
Silver	0.00001	NA	NA	NA	0 00001
	Nonr	adiological Ha	ard Indices by	Pathway	
	0 0012	0 000000003	0 006	NA	
Uranium 233/234	NA	NA	NA	NA	NA
Uranium-235+D	NA	NA	NA	NA	NA
Uranium-238+D	NA	NA	NA	NA	NA
	Rac	hological Haza	rd Indices by	Pathway	
	NA	NA	NA	NA	
		Total Nonrada	ological Hazar	d Index	0.007
		Total Radiolog			NA
		Total Hazard I	ndex		0 007

<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route



Table 6-123 Adult Open Space User CT Noncarcinogenic Hazard Indices for OU 5, AOC1

					Dermal	Dermal	Dermal		
		Ingestion of		Inhalation of	Absorption	Absorption	Absorption	External	Total HI
	Ingestion of	Seep	Ingestion of	Airborne	of Surface	of Seep	of Seep	Radiation	by
Chemicals of Concern	Surface Soil	Sediments	Seep Water	Particulates	Soil	Sediments	Water	Exposure	Chemical
Acetone	ΥN	ΥA	0 000002	ΑN	ΑN	NA	0 0000000	Ϋ́	0 000002
Antimony	٧N	9000 0	NA	ΑN	NA VA	VN	Ϋ́Z	NA VA	9000 0
Aroclor 1254	0 0003	NA	NA	NA	0 0001	NA	Ϋ́	Ϋ́Ζ	0 0004
Benzo(a)anthracene	ΥN	ΑN	ΑN	Ϋ́Α	Ϋ́Α	Ϋ́Α	Ϋ́Z	Ϋ́Α	Ϋ́Z
Benzo(a)pyrene	AN	NA	NA	NA	NA	NA	Ϋ́Z	Ϋ́Z	ΑN
Benzo(b)fluoranthene	ΨN	ΑN	٧X	NA	ΥΥ	ΝA	Ϋ́	Y Y Y	ΑN
Beryllium	ΥN	0 000002	NA	AN	A'A	ΝA	Ϋ́Z	Y'A	0 0000017
Copper	0 000007	Ϋ́Α	Ϋ́Z	Ϋ́Α	Y Y	Ϋ́Α	ΨZ	Ϋ́	0 000007
Dibenzo(a h)anthracene	AN	Ϋ́	ΝA	NA	NA	NA	ΥN	Ϋ́Х	AN
1 1 Dichloroethene	٧N	NA	0 000001	NA	ΥV	NA	0 000003	ΨN	0 000004
1 2 Dichloroethene	NA	NA	0 000001	NA	Ϋ́	NA	0 000002	Ϋ́Z	0 000003
Fluoranthene	5000000 0	٨N	NA	AN	NA	VΝ	AN	Ϋ́	0 0000000
Indeno(1 2 3 cd)pyrene	VΝ	AN	NA	NA	ΝA	٧N	ΝA	Y Z	Ϋ́
Mercury	0 000004	NA	NA	0 0000000004	ΥV	NA	Ϋ́Α	Ϋ́	0 000004
Pyrene	9000000 0	NA	NA	NA	NA	NA	NA	ΝA	9000000 0
Silver	0 000003	ΑN	NA	NA	NA	NA	ΑN	Ϋ́Ζ	0 000003
Tetrachloroethene	NA	NA	0 000007	NA	NA	NA	0 00005	¥Z	0 0005
Trichloroethene	ΥN	NA	NA	NA	Ϋ́N	NA	Ϋ́	¥z	₹ Z
Zinc	ΑN	0 000001	NA	NA	NA	ΝA	NA	NA	0 000001
				Vonradiological Hazard	ird Indices by	Pathway			
	0 0003	9000 0	0 00001	0 0000000004	0 0001	NA	0 0005	V.	
Uranium 233/234	NA NA	Ϋ́Α	Ϋ́Ζ	NA	AN	NA	AN	Ϋ́Z	ΑN
Uranium 235+D	Ϋ́	Ϋ́	Ϋ́Α	ΥN	NA A	Ϋ́Α	NA	NA	ΑN
Uranium 238+D	VΑ	AN	NA	NA	NA	NA	NA	NA	Ϋ́
			Ra	Radiological Hazard Indices by Pathway	d Indices by Pa	athway			
	٧V	AN	NA	NA	NA	NA	ΑN	ΥN	
					Total Nonradiological Hazard Index	ological Haza	rd Index		0 002
					Total Radiological Hazard Index	gical Hazard	ndex		Ϋ́
					Total Hazard Index	Index			0 002

= Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route Ϋ́Z



Table 6-124
Child Open Space User CT Noncarcinogenic Hazard Indices for OU 5, AOC1

			Total HI
1	Ingestion of Surface	Ingestion of Seep	by
Chemicals of Concern	Soil	Sediments	Chemical
Acetone	NA NA	NA	NA
Antimony	NA	0 006	0 006
Aroclor 1254	0 003	NA	0 003
Benzo(a)anthracene	ŇA	NA.	NA
Benzo(a)pyrene	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA
Beryllium	NA	0 00002	0 000016
Copper	0 00006	NA	0 00006
Dibenzo(a h)anthracene	NA	NA	NA
1 1 Dichioroethene	NA	NA	NA
1 2 Dichloroethene	NA	NA	NA
Fluoranthene	0 000004	NA	0 000004
Indeno(1 2 3-cd)pyrene	NA	NA	NA
Mercury	0 00004	NA	0 00004
Pyrene	0 000005	NA	0 000005
Silver	0 00003	NA	0 00003
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Zinc	NA	0 00001	0 00001
	Nonradiological Hazar	d Indices by Pathway	•
	0 003	0 006	
Uranium 233/234	NA	NA	NA
Uransum-235+D	NA	NA	NA
Uranium 238+D	NA	NA	NA
	Radiological Hazard	Indices by Pathway	
	NA	NA	
	Total Nonradiological	Hazard Index	0 009
	Total Radiological Ha	rard Index	NA
	Total Hazard Index		0 009

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<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

Table 6-125
Construction Worker RME Noncarcinogenic Hazard Indices for OU 5, AOC2

			Dermal		<u> </u>
	Ingestion of	Inhalation of	Absorption of	External	•
	Subsurface	Airborne	Subsurface	Radiation	Total HI by
Chemicals of Concern	Soil	Particulates	Soil	Exposure	Chemical
Antimony	0 013	NA	NA	NA	0 013
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Beryllium	0 00015	NA	NA	NA	0 00015
Cadmium	0 0007	NA	0 00007	NA	0 0008
Copper	0 0006	NA	NA	NA	0 0006
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	NA	0 0000000000006	NA	NA	0 0000000000006
Molybdenum	0 002	NA	NA	NA	0 002
Nickel	0 0006	NA	NA	NA	0 0006
Рутепе	NA	NA	NA	NA	NA
Silver	0 0005	NA	NA	NA	0 0005
		Nonradiolog	ical Hazard lindi	ces by Pathway	
	0 02	0 000000000006	0 00007	NA	
Uranium-233/234	NA	NA NA	NA NA	NA.	NA
Uranium-235+D	NA	NA	NA	NA	NA
Uranium-238+D	NA	NA	NA	NA	NA
		Radiological Hazard			<del> </del>
	NA	NA.	NA	NA	<b> </b>
			Nonradiologica	Hazard Index.	0 02
			Radiological Ha	zard Index:	NA
			Total Hazard In	dex:	0 02

<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route



Table 6-126
Current Security Worker RME Noncarcinogenic Hazard Indices for OU 5, AOC2

	1	Inhalation of	Dermal	External	Total HI
	Ingestion of	Airborne	Absorption of	Radiation	by
Chemicals of Concern	Surface Soil	Particulates	Surface Soil	Exposure	Chemical
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Copper	0 00001	NA	NA	NA	0 00001
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	0 00000007	NA	NA	NA	0 00000007
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	0 000008	0.00000000000002	NA	NA	0 000008
Pyrene	0 00000011	NA	NA	NA	0 00000011
Silver	0 00001	NA	NA	NA	0 00001 -
	N	onradiological Haza	rd Indices by Par	thway	ža-
	0 00003	0 0000000000002	NA	NA	
Uransum-233/234	NA	NA	NA	NA	NA
Urangum-235+D	NA	NA	NA	NA	NA
Uranium-238+D	NA	NA	NA	NA	NA
		Radiological Hazard	Indices by Path	way	
	NA	NA	NA	NA	
			Nonradiologica	Hazard Index	0.00003
			Radiological Hi	zard Index:	NA
			Total Hazard In	dex:	0 00003

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<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route.

Ecological Worker RME Noncarcinogenic Hazard Indices for OU 5, AOC2 **Table 6-127** 

H 1 - 4 - 4	LOTAL FLI	à	Chemical	0 005	NA NA	NA	0 000015	0 0001	NA A	0 00003	0 00002	9000000	NA NA	0 00007	0 0000010	0 00008	0 0004	NA	0 0002			₹Z	₹N	5	ΨZ			900 0	ΝΑ	900 0
-	External	Radiation	Exposure	NA	NA	NA	NA	NA A	NA A	NA	NA	NA	NA	NA VA	NA	NA	NA	NA	NA		NA	V.V.	42	SNI	ΑA		ΝΑ			
-	Dermal	Absorption of	Seep Water	NA	NA	NA	NA	NA	NA	0 00002	0 00001	NA	NA	NA NA	NA	NA	0 0004	AN	NA		0 0004	V.	VIII	4	ΨN		AN	Nonradiological Hazard Index	lazard Index	ndex.
Dermal	Absorption	of Seep	Sediments	ΑΝ	ΝΑ	NA	NA	NA	NA	NA	NA	NA	AN	NA	Ą	ΑΝ	Ϋ́	Ϋ́	NA	athway	NA	VIA	VA	W	Ϋ́Α	hway	¥	Nonradiologic	Radiological Hazard Index	Total Hazard Index
	Dermal	Absorption of	Surface Soil	NA	ΑN	Ϋ́Α	NA	NA	NA	NA	NA	NA	ΝΑ	Ϋ́	ΑΝ	Ϋ́	AN	AN	NA	d Indices by Pa	NA	MA	Y.	Y.	NA NA	Indices by Pat	ΝA			
	Inhalation of	Airborne	Particulates	NA	NA	NA	ΑN	ΑΝ	NA	ΑΝ	NA	NA	ΝΑ	0 000000000001	ΑΝ	ΑΝ	NA A	A'A	ΝΑ	Nonradiological Hazard Indices by Pathway	0 000000000000	7.1.2	AN .	νA	NA	Radiological Hazard Indices by Pathway	NA			
		Ingestion of	Seep Water	NA AN	AN	AN	AN	Ϋ́	ΑΝ	0 000007	0 000007	ΑΝ	AN			AN	900000 0	Ϋ́Z	Ϋ́Ν	ľ.	0 00002		¥Z;	ΑN	NA	<b>X</b>	Ϋ́N			
	Ingestion of	Seep	Sediments	0 005	Ϋ́	ΑN	1000000	Ϋ́	Ϋ́Z	Ϋ́	Ϋ́	NA	ΑΝ	AN AN	¥z	ĄZ	Ϋ́Z	AN	0 0002		900 0		YY.	NA	ΨN		Ϋ́X			
		Ingestion of	Surface Soil	AN	Ϋ́	AN	A'A	0 0001	NA	AN	ΑΝ	9000000 0	Ϋ́Α	0 00007	0 0000010	800000	NA VA	NA VA	ĄZ		0 0003		Y.	NA	ΑΝ		Ϋ́			
			Chemicals of Concern	Antimony	Benzo(a)pyrene	Benzo(b)fluoranthene	Beryllium	Copper	Dibenzo(a h)anthracene	1 Dichloroethene	1.2 Dichloroethene	Fluoranthene	Indeno(12.3-ed)ovrene	Mercillo	Pyrene	Silver	Tetrachloroethene	Trichloroethene	Zinc				Uranium 233/234	Uranium 235+D	Uranium 238+D					

Table 6-128
Office Worker RME Noncarcinogenic Hazard Indices for OU 5, AOC2

	Ingestion of Surface Soil	1	Dermal Absorption of Surface Soil	External Radistion Exposure	Total HI by Chemical
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Copper	0 0002	NA	NA	NA	0 0002
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	0 0000011	NA	NA	NA	0 0000011
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	0 0001	0 000000000003	NA	NA	0 0001
Pyrene	0 0000017	NA	NA	NA	0 0000017
Silver	0 0002	NA	NA	NA	0 0002
	N	onradiological Haz	ard Indices by Pa	thway	
	0 0005	0 000000000003	NA	NA	
Uramum-233/234	NA	NA	NA NA	NA	NA
Uransum-235+D	NA	NA	NA	NA	NA
Uranium-238+D	NA	NA	NA	NA	NA
		Radiological Hazar	d Indices by Path	IWAY	
	NA	NA	NA	NA	
· · · · · · · · · · · · · · · · · · ·	1		Nonradiologica	Hazard Index:	0 0005
	1	<u> </u>	Radiological Ha		NA
	1		Total Hazard In		0 0005

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<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route.

Adult Open Space User RME Noncarcinogenic Hazard Indices for OU 5, AOC2 **Table 6 129** 

-					_	Dermal			
		Ingestion of		Inhalation of	Dermal	Absorption of	Dermal	External	Total HI
_	Ingestion of	Soep	Ingestion of	Aurborne	Absorption of	Soep	Absorption of	Radiation	à
Chemicals of Concern	Surface Soil	Š	Seep Water	Particulates	Surface Soil	Seduments	Seep Water	Exposure	Chemical
Antimony	AN	0 003	NA	NA	NA	NA	NA	NA	0 003
Benzo(a)pyrene	ΑN	ļ	Ϋ́Α	NA	NA	ΑN	ΑΝ	ΑΝ	Ϋ́
Benzo(b)fluoranthene	ΑN	Ϋ́Z	Ϋ́	ΝA	ΥN	Ϋ́Z	Ϋ́Α	ΥN	NA
Beryllium	Ϋ́	6000000	Ϋ́Α	NA	Ϋ́Α	ΑN	ΑΝ	AN	600000 0
	0 00002	Ϋ́	ΝA	٧N	٧N	ΥN	ΥV	NA	0 00002
Dibenzo(a,h)anthracene	NA		NA	٧N	VΝ	ΥN	ΑN	NA	٧V
1 1 Dichloroethene	Ϋ́	١.	8000000	ΑN	ΝA	٧X	0 00002	ΑN	0 00003
1 2 Dichloroethene	NA	NA A	8000000 0	NA	Ϋ́	Ϋ́	0 00002	ΑN	0 00002
Fluoranthene	0 00000011		Ϋ́	ΑN	ΑN	Ϋ́χ	¥	ΑN	0 0000001
Indeno(1 2 3-cd)pyrene	AN	AA	ΝΑ	NA	۸×	AN	Ϋ́	Ϋ́Α	Ϋ́Α
Mercury	0 00001		NA	0 0000000000000	ΑN	Ϋ́Z	ΑN	ΑN	0 00001
Pyrene	0 00000017		AN	NA	Ϋ́	ĄX	ΝΑ	NA	0 0000002
Silver	0 00002	Ϋ́	ΑN	ΑN	NA	ΝA	Ϋ́Α	NA	0 00002
Tetrachloroethene	NA	Ϋ́	200000 0	VA.	VV	VΑ	0 0005	NA	\$000 0
Trichloroethene	AN	ΑN	YN	VN	NA.	NA	ΝA	NA	YN
Zinc	NA	0 0001	VN.	NA	ΥN	٧N	NA	NA	1000 0
			Z	Nonradiological Hazard Indices by Pathway	d Indices by Pa	thway			
	0 00000	0 003	0 00003	0 0000000000000	ΑΝ	ΑΝ	0 0003	NA	
Uranium 233/234	AN	AN	NA	NA	NA	AN	AN	NA	AN
Uranum-235+D	Ϋ́Z	Ą	ΑΆ	NA	AN AN	Ϋ́Α	۸A	NA	Ϋ́
Uranium 238+D	ΑN	Ϋ́	NA	NA	NA	NA	ΝA	AN	Ϋ́
				Radiological Hazard Indices by Pathway	Indices by Path	ıway			
	Ϋ́	Ϋ́Α	ΑN	NA	NA	ΥV	ΑN	ΑN	
						Norradiologic	Norradiological Hazard Index		0 004
						Radiological Hazard Index	iszard Index:		NA
						Total Hazard Index	Index.		0 004

Table 6-130
Child Open Space User RME Noncarcinogenic Hazard Indcies for OU 5, AOC2

Chemicals of Concern	Ingestion of Surface Soil	Ingestion of Scep Sediments	Total HI by Chemical
Antimony	NA NA	0.03	0.03
Aroclor 1254	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA
Beryllium	NA NA	0 00008	0 00008
Copper	0 0002	NA	0 0002
Dibenzo(a,h)anthracene	NA NA	NA	NA
Fluoranthene	0 0000010	NA	0 0000010
Indeno(1,2,3-cd)pyrene	NA NA	NA	NA
Mercury	0 0001	NA	0 0001
Pyrene	0 0000016	NA	0 0000016
Silver	9.0001	NA .	0 0001
Zinc	NA NA	0 001	0 001
	Nonradiological Hazard	Indices by Pathway	
	0 0005	0 03	
Uranium-233/234	NA NA	NÁ.	NA NA
Uranium-235+D	NA NA	NA	NA
Uranium-238+D	NA NA	NA	NA
	Radiological Hazard I	ndices by Pathway	
	NA.	NA	
	Nopradiological Hazard Inde	ex:	0 03
	Radiological Hazard Index:		NA
	Total Hazard Index:		0 03

<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route



Table 6-131
Construction Worker CT Noncarcinogenic Hazard Indices for OU 5, AOC2

		<del></del>	Dermal	<del></del>	T T
	Ingestion of	Inhalation of	Absorption of	External	•
	Subsurface	Airborne	Subsurface	Radiation	Total HI by
Chemicals of Concern	Soil	Particulates	Soil	Exposure	Chemical
Antimony	0 002	NA	NA	NA	0 002
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Beryllium	0 00003	NA	NA	NA	0 00003
Cadmium	0 0001	NA	0 00001	NA	0 0001
Copper	0 0001	NA	NA	NA	0 0001
Dibenzo(a h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA
Indeno(1 2 3-cd)pyrene	NA	NA	NA	NA	NA
Mercury	NA	0 0000000000005	NA	NA	0 0000000000005
Molybdenum	0 0004	NA	NA	NA	0 0004
Nickel	0 0001	NA	NA	NA	0 0001
Pyrene	NA	NA	NA	NA	NA
Silver	0 00009	NA	NA	NA	0 00009
	N	onradiological Hazaro	Indices by Path	way	
	0 003	0 0000000000005	0 00001	NA	
Uranium 233/234	NA	NA NA	NA NA	NA	NA NA
Uranium 235+D	NA NA	NA NA	NA NA	NA	NA NA
Uranium 238+D	NA NA	NA NA	NA NA	NA	NA
Clanium 230 i D		Radiological Hazard			
	NA	NA	NA I	NA NA	<del> </del>
		Total Nonradiologica	al Hazard Index		0 003
		Total Radiological H			NA
		Total Hazard Index			0 003

Table 6-132 Current Worker CT Noncarcinogenic Hazard Indices for OU 5, AOC2

			Dermal				
		Inhalation of	Absorption	External	Total HI		
	Ingestion of	Airborne	of Surface	Radiation	by		
Chemicals of Concern	Surface Soil	Particulates	Soil	Exposure	Chemical		
Benzo(a)pyrene	NA	NA	NA	NA	NA		
Benzo(b)fluoranthene	NA	NA	NA	NA	NA		
Copper	0 000002	NA	NA	NA	0 000002		
Dibenzo(a h)anthracene	NA	NA	NA	NA	NA		
Fluoranthene	0 000000011	NA	NA	NA	0 000000011		
Indeno(1 2 3-cd)pyrene	NA	NA	NA	NA	NA		
Mercury	0 000001	0 0000000000000	NA	NA	0 000001		
Pyrene	0 000000017	NA	NA	NA	0 000000017		
Silver	0 000002	NA	NA	NA	0 000002		
		Nonradiological Hazard Indices by Pathway					
	0 000005	0 000000000000	NA	NA			
Uranum 233/234	NA	NA NA	NA	NA	NA		
Uranium-235+D	NA	NA	NA	NA	NA		
Uranum 238+D	NA	NA	NA	NA	NA		
	Ri	diological Hazard Is	adices by Path	Way			
	NA	NA	NA	NA			
		Total Nonradiologi	cal Hazard Ind	ex	0 000005		
		Total Radiological	Hazard Index		NA		
		Total Hazard Index			0 000005		

NA = Not a COC for this pathway or no toxicity factor is available or appropriate for this exposure route



Table 6-133 Ecological Worker CT Noncarcinogenic Hazard Indices for OU 5, AOC2

					Dermal	Dermal			
		Ingestion of		Inhalation of	Absorption	Absorption	Dermai	External	Total HI
	Ingestion of	Seep	Ingestion of	Airborne	of Surface	of Seep	Absorption of	Radiation	þ
Chemicals of Concern	Surface Soil	Sediments	Seep Water	Particulates	Soil	Sediments	Seep Water	Exposure	Chemical
Antimony	ΑN	6000 0	NA	NA	Ϋ́	ΑN	Ϋ́Α	NA	6000 0
Benzo(a)pyrene	ΑN	ΝΑ	ΑN	NA	Ϋ́Α	Ϋ́	ΑΝ	ΝĄ	Ϋ́
Benzo(b)fluoranthene	ΑN	Ϋ́	Ϋ́	AN	Ϋ́	Ν	Ϋ́Ν	ΑN	ΑN
Beryllum	Ϋ́	0 000002	ΑN	ΑN	ΥN	AN	NA	NA	0 000002
Copper	0 00003	Ϋ́	Ϋ́	YZ YZ	Ϋ́Α	Ϋ́	AN	ΥN	0 00003
Dibenzo(a h)anthracene	Ϋ́	ΑN	Ϋ́Α	ΥN	Ϋ́	ΑN	ΑN	NA	ΑN
1 1 Dichloroethene	ΑN	ΑN	0 0000008	NA AN	Ϋ́	Ϋ́Ν	0 00001	ΨN	0 00001
1 2 Dichloroethene	ΨZ	A A	8000000 0	NA	ĄX	ΑN	0 000007	Ϋ́Ν	0 000008
Fluoranthene	0 00000017	ΑN	ΑN	NA	Ϋ́	ΝĄ	Ϋ́Α	Ϋ́	0 00000017
Indeno(1 2 3 cd)pyrene	ΝA	AN	ΑN	NA	AN	NA	NA	NA	NA
Mercury	0 00002	AN	AN	0 000000000000	AN	NA	NA	NA	0 00002
Pyrene	0 0000003	ΑN	Ϋ́	NA	Ϋ́	Ϋ́	Ϋ́	ΑN	0 0000003
Silver	0 00002	AN	NA	NA	AN	ΝA	NA	NA	0 00002
Tetrachloroethene	ΥN	ΑN	0 0000007	NA	Ϋ́Α	ΥN	0 0002	ΨN	0 0002
Trichloroethene	Ϋ́	ΥN	ΑN	ΥN	Ϋ́	Y Y	AN	NA	ΑN
Zinc	ΥN	0 00003	NA	NA	NA	NA	NA	NA	0 00003
			Non	Nonradiological Hazard Indices by Pathway	Indices by Pa	thway			
	0 00008	6000 0	0 000002	0 000000000000	AN	AN	0 0003	ΑN	
Uranium 233/234	ΥN	NA	AN	AN	NA	Ϋ́	AN	VΑ	NA
Uranium 235+D	Ϋ́	NA A	Ϋ́	NA	¥	NA AN	Ϋ́Z	Ϋ́Α	A'N
Uranium 238+D	Ϋ́	ΑN	NA	NA	NA	ΝĄ	NA	NA	NA
			2	Radiological Hazard Indices by Pathway	ndices by Path	way			
	Ϋ́	Ϋ́	NA	NA	NA	AN	ΝA	ΑN	
					Total Nonrad	Total Nonradiological Hazard Index	ird Index		0 0012
					Total Radiolo	Total Radiological Hazard Index	Index		Ϋ́Α
					Total Hazard Index	Index			0 0012

Table 6-134
Office Worker CT Noncarcinogenic Hazard Indices for OU 5, AOC2

		Inhalation of	Dermai	External	Total HI
	Ingestion of	Airborne	Absorption of	Radiation	by
	Surface Soil	Particulates	Surface Soil	Exposure	Chemical
Benzo(a)pyrene	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA
Соррег	0 00002	NA	NA	NA	0 00002
Dibenzo(a h)anthracene	NA	NA	NA	NA	NA
Fluoranthene	0.00000009	NA	NA	NA	0 00000009
Indeno(1 2,3-cd)pyrene	NA	NA	NA	NA	NA
Мегсигу	0 00001	0 0000000000002	NA	NA	0 00001
Pyrene	0 00000014	NA	NA	NA	0 00000014
Silver	0 00001	NA	NA	NA	0 00001
	Nonre	diological Hazard	way	***	
	0 00004	0 000000000002	NA		
Uranium 233/234	NA	NA	NA NA	NA	NA
Urannum-235+D	NA	NA	NA	NA	NA
Uranium 238+D	NA	NA	NA	NA	NA
	Rad	ological Hazard In	dices by Pathw	ay	
	NA	NA	NA	NA	
		Total Nonradiolog	ical Hazard Ind	ex	0 00004
		Total Radiological	Hazard Index		NA
		Total Hazard Inde			0 00004

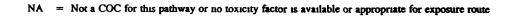




Table 6-135
Adult Open Space User CT Noncarcinogenic Hazard Indices for OU 5, AOC2

					Dermal	Dermal	Dermal		
		Ingestion of		Inhalation of	Absorption	Absorption	Absorption	External	Total HI
	Ingestion of	Seep	Ingestion of	Airborne	of Surface	of Seep	of Seep	Radiation	by
Chemicals of Concern Surface Soil	Surface Soil	Sediments	Seep Water	Particulates	Soil	Sediments	Water	Exposure	Chemical
Antimony	NA	0 0005	NA	NA	NA	NA	NA	NA	0 0005
Benzo(a)pyrene	VΑ		NA	NA	NA	٧N	NA	NA	NA
Benzo(b)fluoranthene	ΥN	i	NA	NA	AN	ΥN	NA	NA	NA
Beryllium	Ϋ́Υ	0 000001	NA	NA	ΝA	VΝ	ΥN	ΑN	0 000001
Copper	0 000004	NA	AN	NA	ΑN	ΥN	NA	VΥ	0 000004
Dibenzo(a h)anthracene	ΝΑ	ΑN	ΥN	NA	ΑN	ΝA	Ϋ́Ν	NA	AN
1 1 Dichloroethene	Ϋ́	NA	0 0000007	VV	ΑN	Ϋ́	0 000000	Ϋ́	0 000003
1 2 Dichloroethene	Ϋ́		0 0000007	NA	ΑN	ΥN	0 000001	NA	0 000002
Fluoranthene	0 00000000	ΥN	AN	NA	AN	NA	NA	NA	0 00000002
Indeno(1 2 3 cd)pyrene	Ϋ́N		NA	NA	ΝA	٧N	ΑN	VV	ΑN
Mercury	0 000003		Ϋ́	0 000000000000000	ΥN	Ϋ́Α	Ϋ́	Y.	0 000003
Pyrene	0 00000003		NA	NA	ΥN	ΥN	Ϋ́	ΥN	0 00000003
	0 000003		AN	NA	ΑN	Ϋ́	ΝA	A'A	0 000003
Tetrachloroethene	NA	AN	9000000 0	NA	NA	NA	0 00004	NA	0 00004
Trichloroethene	ΥN	ΑN	NA	NA	ΝΑ	NA	NA	NA	NA
Zinc	ΥN	0 00002	ΝĄ	NA	NA	NA	NA	NA	0 00002
			Ž	Nonradiological Hazard Indices by Pathway	d Indices by Pa	ıthway			
	0 0000	9000 0	0 000002	0 0000000000000000000000000000000000000	ΨN	ΝΑ	0 00004	N.A.	
Uranium 233/234	NA	N.A.	NA	Y.	ΥN	NA	NA	NA	AN
Uranium 235+D	¥	Ϋ́Z	Ϋ́Υ	NA	Ϋ́	Ϋ́Α	Ϋ́	Y.	Ϋ́
Uranium 238+D	ΑΝ	AN	NA	NA	ΝA	NA	NA	Ϋ́	Ϋ́
				Radiological Hazard Indices by Pathway	Indices by Patl	ıway			
	¥	Ϋ́	ΑN	NA	NA	ΝA	ΥΥ	Ϋ́Ν	
					Total Nonrad	Total Nonradiological Hazard Index	rd Index		9000 0
					Total Radiolo	Total Radiological Hazard Index	ndex		Ϋ́Z
					Total Hazard Index	Index			9000 0

Table 6-136
Child Open Space User CT Noncarcinogenic Hazard Indices for OU 5, AOC2

Chemicals of Concern	Ingestion of Surface Soil	Ingestion of Seep Sediments	Total HI by Chemical
Antimony	NA	0 005	0 005
Benzo(a)pyrene	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA
Beryllium	NA	0 000014	0 000014
Copper	0 00004	NA	0 00004
Dibenzo(a h)anthracene	NA	NA	NA
Fluoranthene	0 0000002	NA	0 0000002
Indeno(1 2 3-cd)pyrene	NA	NA	NA
Mercury	0 00002	NA	0 00002
Pyrene	0 0000003	NA	0 0000003
Silver	0 00003	NA	0 00003
Zinc	NA	0 0002	0 0002
	Nonradiological Hazi	rd Indices by Pathway	1
	0 00010	0 005	
Uranium-233/234	NA	NA	NA
Uranium 235+D	NA	NA	NA
Uransum-238+D	NA	NA	NA
	Radiological Hazard	Indices by Pathway	
	NA	NA	
	Total Nonradiologica	Hazard Index	0 005
	Total Radiological Ha	zard Index	NA
	Total Hazard Index		0 005

NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

					Dermal	Dermal	Dermal		1
	Ingestion of	Ingestion of	Ingestion of	Inhalation of	Absorption of	Absorption of	Absorption of	External	Total HI
	Pond	Stream	Surface	Airborne	Pond	Stream	Surface	Radiation	by
Chemicals of Concern	Sediments	Sediments	Water	Particulates(1)	Sediments	Sediments	Water	Exposure	Chemical
Barium	NA	NA	0 00003	NA	NA	NA	NA	NA	0 00003
Copper	NA	0 0003	NA	NA	NA	NA	NA	NA	0 0003
Lithium	NA	NA	0 00003	NA	NA	NA	NA	NA	0 00003
Mercury	0 0003	0 0004	NA	0 0000002	NA	NA	NA	NA	0 0006
Strontium	NA	NA	0 00001	NA	NA	NA	NA	NA	0 00001
Zinc	0 00004	0 0001	NA	NA	NA	NA	NA	NA	0 0001
			No	onradiological H	azard Indices by	Pathway			
	0 0003	0 001	0 00007	0 0000002	NA	NA	NA	NA	
Americium-241	NA	NA	NA NA	NA NA	NA	NA	NA	NA NA	NA
Plutonium 239/240	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium-233/234	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium-235+D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium 238+D	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1	Radiological Haz	ard Indices by P	athway			
	NA	NA	NA	NA	NA	NA	NA	NA	
						Total Nonradio	ological Hazard	Index	0 001
						Total Radiolog	ncal Hazard In	dex	NA
						Total Hazard I	ndex		0 001

NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route



<sup>(1)</sup> Includes only contribution of stream sediments

Table 6-138
Adult Open Space User RME Noncarcinogenic Hazard Indices for OU 5, AOC3

· · · · · · · · · · · · · · · · · · ·	1				Dermal	Dermal	Dermal		
	Ingestion of	Ingestion of	Ingestion of	Inhalation of	Absorption of	Absorption of	Absorption of	External	Total Risk
	Pond	Stream	Surface	Airborne	Pond	Stream	Surface	Radiation	by
Chemicals of Concern	Sediments	Sediments	Water	Particulates <sup>(1)</sup>	Seduments	Sediments	Water	Exposure	Chemical
Barium	NA	NA	0 00004	NA	NA	NA	NA	NA	0 00004
Copper	NA	0 0002	NA	NA	NA	NA	NA	NA	0 0002
Lathaum	NA	NA	0 00003	NA	NA	NA	NA	NA	0 00003
Mercury	0 0002	0 0002	NA	0 00000004	NA	NA	NA	NA	0 0004
Strontium	NA	NA	0 00002	NA	NA	NA	NA	NA	0 00002
Zinc	0 00002	0 00006	NA	NA	NA	NA	NA	NA	0 00008
			N	onradiological H	azard Indices by	Pathway			
	0 0002	0 0004	0 00009	0 00000004	NA	NA	NA	NA	
Americium-241	NA	NA	NA.	NA	NA.	NA	NA	NA	NA
Plutonium-239/240	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranıum-233/234	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium-235+D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium-238+D	NA	NA	NA	NA	NA	NA	NA	NA	NA
	· · · · · ·			Radiological Haz	ard Indices by P	athway			
	NA	NA	NA	ŊA	NA.	NA	NA	NA	
					1	Total Nonradi	ological Hazar	d Index	0 0007
					i	Total Radiolog	ncal Hazard In	dex:	NA
	1				<b>———</b>	Total Hazard	index:		0 0007

<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route.



<sup>(1)</sup> Includes only contributions of stream sediments.

Table 6-139
Child Open Space User RME Noncarcinogenic Hazard Indices for OU 5, AOC3

Chemicals of Concern	Ingestion of Pond Sediments	Ingestion of Stream Sediments	Total Risk by Chemical
Соррег	NA	0 001	0 001
Mercury	0 001	0 002	0 003
Zinc	0 0002	0 0005	0 0008
	Nonradiological Hazai	d Indices by Pathway	
	0 002	0 004	
Americium 241	NA	NA	NA
Plutonium 239/240	NA	NA	NA
Uranium 233/234	NA	NA	NA
Uranium 235+D	NA	NA	NA
Uranium-238+D	NA	NA	NA
	Radiological Hazard	Indices by Pathway	
	NA	NA	
	Total Nonradiological Ha	zard Index	0 006
	Total Radiological Hazar		NA
	Total Hazard Index:		0 006

<sup>&</sup>quot;NA = Not a COC for this pathway or no toxicity factor is available or appropriate for exposure route

Table 6-140
Ecological Worker CT Noncarcinogenic Hazard Indices for OU 5, AOC3

		1			Dermal	Dermal	Dermal		T
	Ingestion	Ingestion of	Ingestion of	Inhalation of	Absorption of	Absorption	Absorption	External	
	of Pond	Stream	Surface	Airborne	Pond	of Stream	of Surface	Radiation	Total HI by
Chemicals of Concern	Sediments	Sediments	Water	Particulates(1)	Sediments	Seduments	Water	Exposure	Chemical
Barium	NA	NA	0 000004	NA	NA	NA	NA	NA	0 000004
Соррег	NA	0 00004	NA	NA	NA	NA	NA	NA	0 00004
Lithrum	NA	NA	0 000003	NA	NA	NA	NA	NA	0 000003
Mercury	0 00004	0 00006	NA	0 00000008	NA	NA	NA	NA	0 0001
Strontum	NA	NA	0 000001	NA	NA	NA	NA	NA	0 000001
Zinc	0 000006	0 00002	NA ,	NA	NA	NA	NA	NA	0 00002
				Nonradiolog	cal Hazard Indi	ces by Pathwa	y		
	0 00005	0 0001	0 000008	0 00000008	NA	NA	NA		
Americium 241	NA	NA	NA	NA	NA NA	NA	NA	NA	NA NA
Plutonium 239/240	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium 233/234	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium 235+D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium 238+D	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Radiologic	ai Hazard Indice	s by Pathway			
	NA	NA	NA	NA	NA	NA	NA	NA	
						Total Nonradi	ological Haza	rd Index	0 0002
						Total Radiolo			NA
						Total Hazard	Index		0 0002

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A. . .

<sup>(1)</sup> Includes only contributions of stream sediments

NA = Not a COC for this pathway or no toxicity value available or appropriate for exposure route

Table 6-141
Adult Open Space User CT Noncarcinogenic Hazard Indices for OU 5, AOC3

	!				Dermal	Dermal		i T	
	Ingestion of	Ingestion of	! :	Inhalation of	Absorption of	Absorption of	Dermal	External	Total HI
	Pond	Stream	Ingestion of	Airborne	Pond	Stream	Absorption of	Radiation	by
Chemicals of Concern	Sediments	Sediments	Surface Water	Particulates(1)	Sediments	Sediments	Surface Water	Exposure	Chemical
Barium	NA	NA	0 000004	NA	NA	NA	NA	NA	0 000004
Copper	NA	0 00003	NA	NA	NA	NA	NA	NA	0 00003
Lithium	NA	NA	0 000003	NA	NA	NA	NA	NA	0 000003
Mercury	0 00003	0 00004	NA	0 000000003	NA	NA	NA	NA	0 00006
Strontium	NA	NA	0 000001	NA	NA	NA	NA	NA	0 000001
Zinc	0 000004	0 00001	NA	NA	NA	NA	NA	NA	0 00001
			Nonradi	ological Hazar	Indices by Pa	thway			
	0 00003	0 0001	0 000008	0 000000003	NA	NA	NA	NA	
Americium 241	NA	NA	NA.	NA	NA	NA	NA	NA	NA
Plutonium 239/240	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium 233/234	NA	NA	NA NA	NA	NA	NA	NA	NA	NA
Uranium 235+D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium 238+D	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Radiol	ogical Hazard	Indices by Path	way			
	NA	NA	NA	NA	NA	NA	NA	NA	
						Total Nonradio	logical Hazard	Index	0 0001
						Total Radiolog	ical Hazard Ind	lex	NA
						Total Hazard I	ndex		0 0001

<sup>(1)</sup> Includes only contribution of stream sediments

NA = Not a COC for this pathway or no toxicity value available or appropriate for exposure route

Table 6-142
Child Open Space User CT Noncarcinogenic Hazard Indicess for OU 5, AOC3

			Total HI
	Ingestion of Pond	Ingestion of Stream	
	, -	1 "	by
Chemicals of Concern	Sediments	Sediments	Chemical
Copper	NA	0 00007	0 00007
Mercury	0 00007	0 00010	0 0002
Zinc	0 00001	0 00003	0 00004
	Nonradiological Haza	rd Indices by Pathway	
	0 0001	0 0002	
Americium-241	NA	NA NA	NA
Plutonium 239/240	ŇA	NA	NA
Uranium-233/234	NA	NA	NA
Uranium 235+D	NA	NA NA	NA
Uranium-238+D	NA	NA	NA
	Radiological Hazard	Indices by Pathway	
	NA	NA	
	Total Nonradiological I	lazard Index	0 0003
	Total Radiological Haz	ard Index	NA
	Total Hazard Index		0 0003

NA = Not a COC for this pathway or no toxicity value available or appropriate for exposure route

60/60